HP ProLiant DL580 G7 Server Maintenance and Service Guide

Abstract

This document describes service procedures for the HP ProLiant DL580 G7 Server. This document is intended for experienced service technicians. HP assumes that you are qualified in the servicing of computer equipment, are trained in recognizing hazards in products with hazardous energy levels, and are familiar with weight and stability precautions for rack installations.

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Customer self repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (http://www.hp.com/go/selfrepair).

Parts only warranty service

Your HP Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, HP will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

Obligatoire - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (http://www.hp.com/go/selfrepair).

Service de garantie "pièces seules"

Votre garantie limitée HP peut inclure un service de garantie "pièces seules". Dans ce cas, les pièces de rechange fournies par HP ne sont pas facturées.

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedirà direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (http://www.hp.com/go/selfrepair).

Servizio di garanzia per i soli componenti

La garanzia limitata HP può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, HP fornirà gratuitamente le parti di ricambio.

Per il servizio di garanzia per i soli componenti è obbligatoria la formula CSR che prevede la riparazione da parte del cliente. Se il cliente invece richiede la sostituzione ad HP, dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

Zwingend – Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Optional – Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das

defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (http://www.hp.com/go/selfrepair).

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

Ihre HP Garantie umfasst möglicherweise einen Parts-only Warranty Service (Garantieservice ausschließlich für Teile). Gemäß den Bestimmungen des Parts-only Warranty Service stellt HP Ersatzteile kostenlos zur Verfügung.

Für den Parts-only Warranty Service ist das CSR-Verfahren zwingend vorgegeben. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no

enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (http://www.hp.com/go/selfrepair).

Servicio de garantía exclusivo de componentes

La garantía limitada de HP puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, HP le facilitará los componentes de repuesto sin cargo adicional alguno.

Para este servicio de garantía exclusivo de componentes, es obligatoria la sustitución de componentes por parte del usuario (CSR). Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Optioneel: Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (http://www.hp.com/go/selfrepair).

Garantieservice "Parts Only"

Het is mogelijk dat de HP garantie alleen de garantieservice "Parts Only" omvat. Volgens de bepalingen van de Parts Only garantieservice zal HP kosteloos vervangende onderdelen ter beschikking stellen.

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

Opcional – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (http://www.hp.com/go/selfrepair).

Serviço de garantia apenas para peças

A garantia limitada da HP pode incluir um serviço de garantia apenas para peças. Segundo os termos do serviço de garantia apenas para peças, a HP fornece as peças de reposição sem cobrar nenhuma taxa.

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

顧客自己修理保証サービス

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数の顧客自己修理（CSR）部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口に電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。顧客自己修理の際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

部品のみ保証サービス

HP保証サービスには、部品のみ保証サービスが適用される場合があります。このサービスでは、交換部品は無償で提供されます。

部品のみ保証サービスにおいては、CSR部品をお客様により交換作業していただくことが必須となります。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費はお客様の負担となります。

客户自行维修

HP 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 HP（或 HP 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，HP 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，HP 可能会要求您支付更换费用。客户自行维修时，HP 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (http://www.hp.com/go/selfrepair)。

仅部件保修服务

您的 HP 有限保修服务可能涉及仅部件保修服务。根据仅部件保修服务条款的规定，HP 将免费提供更换的部件。

仅部件保修服务要求进行 CSR 部件更换。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP（或 HP 服務供應商或維修夥伴）辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (http://www.hp.com/go/selfrepair)。

僅限零件的保固服務

您的「HP 有限保固」可能包含僅限零件的保固服務。在僅限零件的保固服務情況下，HP 將免費提供替換零件。

針對僅限零件的保固服務，CSR 零件替換是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(http://www.hp.com/go/selfrepair)를 참조하십시오.

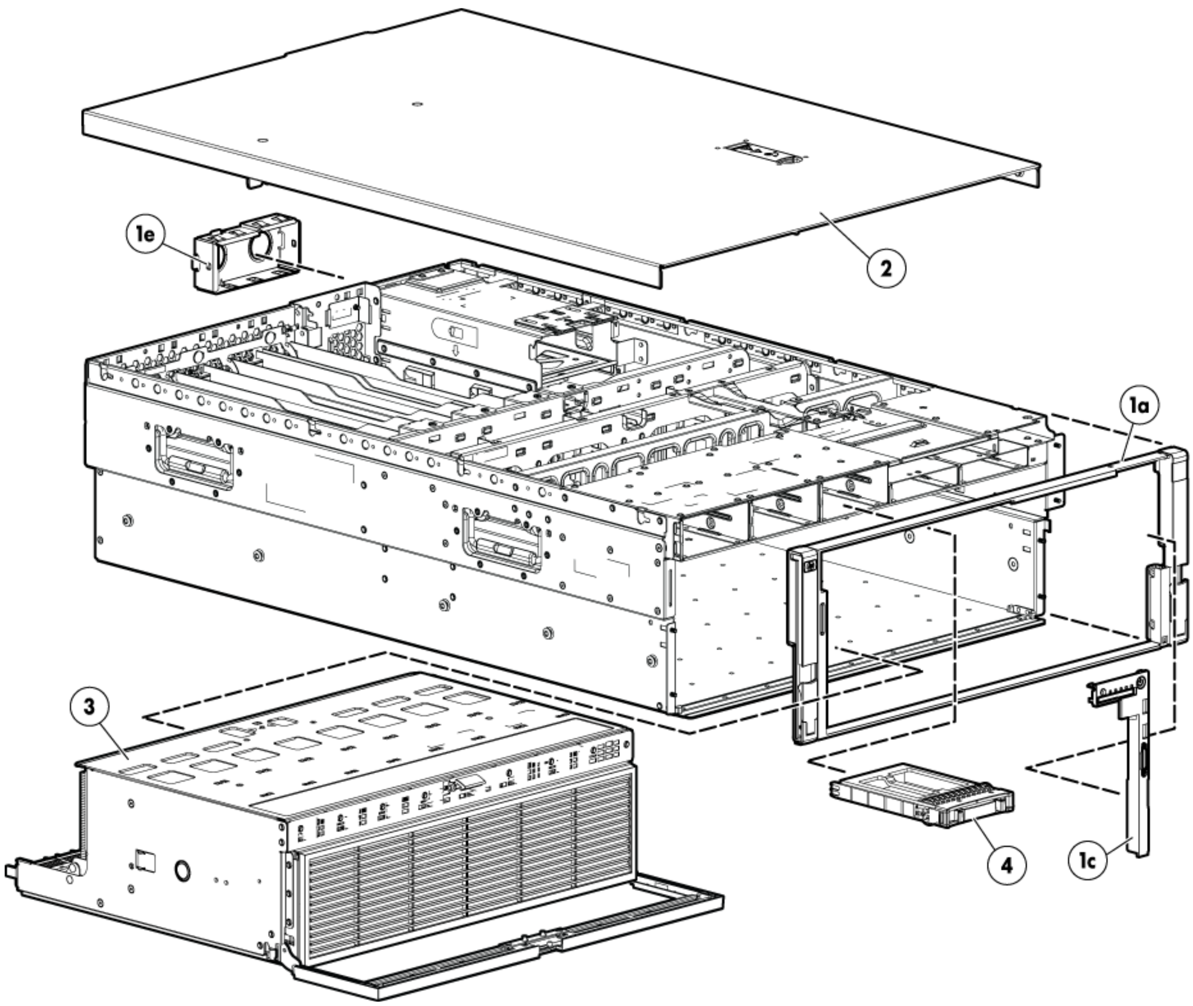
부품 제공 보증 서비스

HP 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 HP는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

Illustrated parts catalog

Mechanical components



Item	Description	Spare part number	Customer self repair (on page 5)
1	Plastics kit	591209-001	—
	a) Bezel	—	Mandatory[1]
	b) PCI card retainer*	—	Mandatory[1]
	c) Bezel assembly, power and Systems Insight Display	—	Mandatory[1]
	d) Fan louver*	—	Mandatory[1]

Item	Description	Spare part number	Customer self repair (on page 5)
	e) Blank, power supply	—	Mandatory[1]
2	Access panel	591206-001	Mandatory[1]
3	Processor memory drawer	591197-001	Mandatory[1]
4	Blank, hard drive	392613-001	Mandatory[1]
5	Tool, T-15 Torx*	199630-001	Mandatory[1]

*Not shown

[1]Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
[2]Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.
[3]No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

[1]Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.
[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.
[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

[1]Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.
[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.
[3]No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un “No” nel Catalogo illustrato dei componenti.

[1]Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.
[2]Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.
[3]No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

[1]Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su

sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.
[3]No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra “No” en el catálogo ilustrado de componentes.

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

[1]Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
[2]Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.
[3]No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca “No” (Não), no catálogo de peças ilustrado.

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

[1]Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

[2]Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

[3]No: 否 — 某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

[1]Mandatory: 強制的 — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

[2]Optional: 選購的 — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

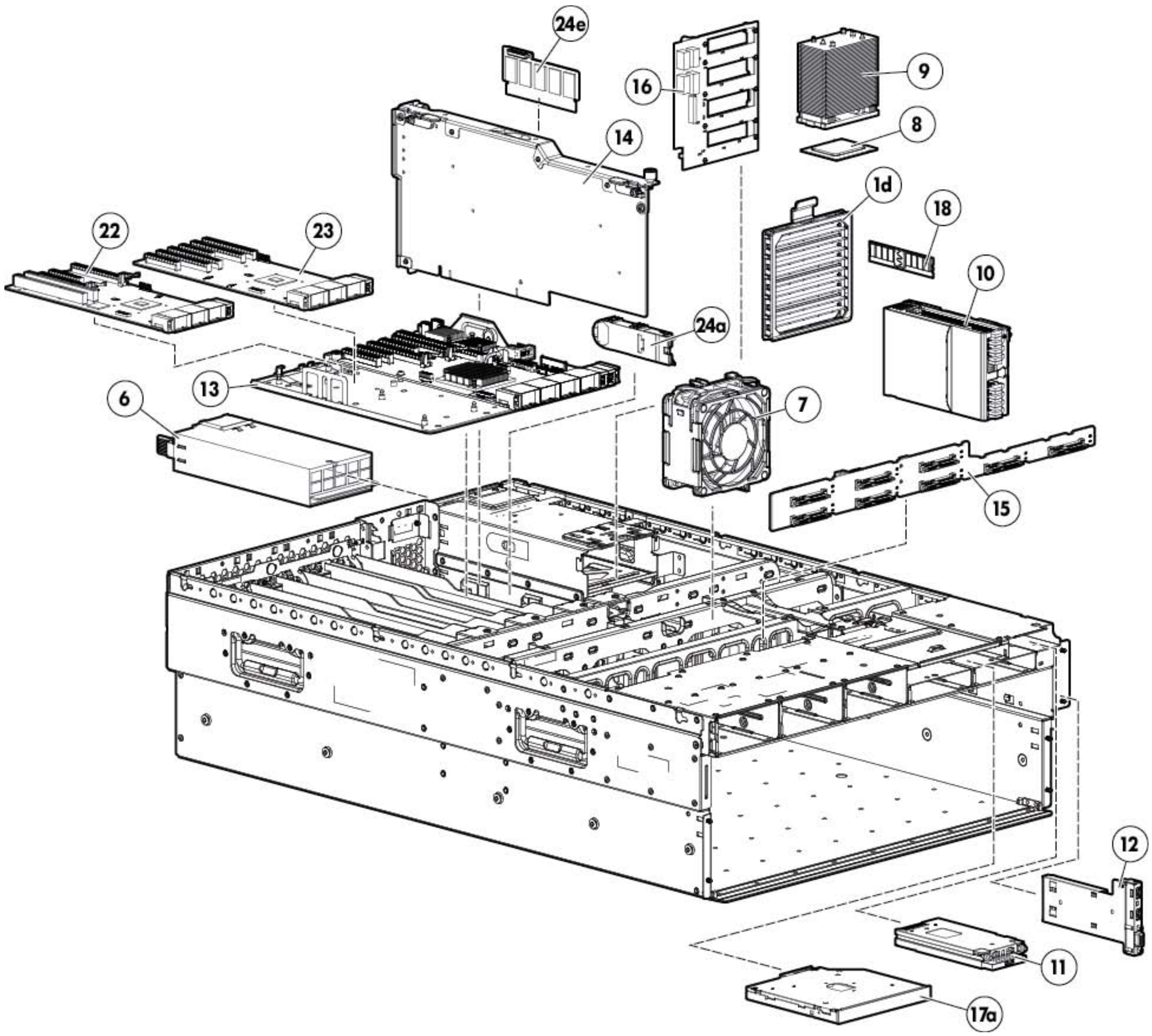
[3]No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

[1] Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

[2] Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

[3] No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

System components



Item	Description	Spare part number	Customer self repair (on page 5)
6	Power supplies	—	—
	a) 1200 W, 90%	498152-001	Mandatory[1]
	b) 1200 W, 94%*	579229-001	Mandatory[1]
7	Fan, 92-mm, hot-plug	591208-001	Mandatory[1]
8	Processor	—	—
	a) Intel Xeon X7560 processor kit **	594893-001	Optional[2]
	b) Intel Xeon X7550 processor kit* **	594894-001	Optional[2]
	c) Intel Xeon E7540 processor kit* **	594897-001	Optional[2]
	d) Intel Xeon E7530 processor kit* **	594898-001	Optional[2]

Item	Description	Spare part number	Customer self repair (on page 5)
	e) Intel Xeon L7555 processor kit* **	594900-001	Optional[2]
	f) Intel Xeon X7542 processor kit* **	594895-001	Optional[2]
	g) Intel Xeon E7520 processor kit* **	597821-001	Optional[2]
	h) Intel Xeon Processor E7-4870 processor kit* **	653050-001	Optional[2]
	i) Intel Xeon Processor E7-4860 processor kit* **	653051-001	Optional[2]
	j) Intel Xeon Processor E7-4850 processor kit* **	653052-001	Optional[2]
	k) Intel Xeon Processor E7-4830 processor kit* **	653053-001	Optional[2]
	l) Intel Xeon Processor E7-4820 processor kit* **	653054-001	Optional[2]
	m) Intel Xeon Processor E7-4807 processor kit* **	653055-001	Optional[2]
	n) Intel Xeon Processor E7-8867L processor kit* **	653056-001	Optional[2]
	o) Intel Xeon Processor E7-8837 processor kit* **	653057-001	Optional[2]
9	Heatsink assembly	591207-001	Optional[2]
10	Memory cartridge	—	—
	a) Standard memory cartridge†	591198-001	Optional[2]
	b) (E7) memory cartridge* †	647058-001	Optional[2]
11	Systems Insight Display assembly	591200-001	Optional[2]
12	USB/video assembly	591201-001	Optional[2]
	Boards	—	—
13	System board	591196-001	Optional[2]
14	SPI boards	—	—
	a) NC375i	591199-001	Optional[2]
	b) NC331i*	697741-001	Optional[2]
15	SAS backplane	591203-001	Optional[2]
16	Power supply backplane	591202-001	No[3]
	Media devices	—	—
17	Media devices	—	—
	a) SATA DVD-ROM drive	481428-001	Mandatory[1]
	b) SATA DVD-RW drive*	481429-001	Mandatory[1]
	Memory	—	—
18	DIMM	—	—
	a) 2-GB PC3 16000R, dual rank	501533-001	Mandatory[1]
	b) 4-GB PC3 8500R, dual rank*	501535-001	Mandatory[1]
	c) 4-GB PC3 10600R, dual rank*	501534-001	Mandatory[1]

Item	Description	Spare part number	Customer self repair (on page 5)
	d) 8-GB PC3 10600R, dual rank*	501536-001	Mandatory[1]
	e) 8-GB PC3L 10600R, dual rank*	606427-001	Mandatory[1]
	f) 16-GB PC3 8500R, quad rank*	501538-001	Mandatory[1]
	g) 16-GB PC3 10600R, dual rank*	632204-001	Mandatory[1]
	h) 32-GB PC3L 8500R, dual rank*	632208-001	Mandatory[1]
	Drives	—	—
19	Hot-plug SAS drive*	—	—
	a) 36-GB, 10,000-rpm, 6.35-cm (2.5-in)	376596-001	Mandatory[1]
	b) 36-GB, 15,000-rpm, 6.35-cm (2.5-in)	432322-001	Mandatory[1]
	c) 72-GB, 10,000-rpm, 6.35-cm (2.5-in)	376597-001	Mandatory[1]
	d) 72-GB, 15,000-rpm, 6.35-cm (2.5-in)	432321-001	Mandatory[1]
	e) 146-GB, 10,000-rpm, 6.35-cm (2.5-in)	432230-001	Mandatory[1]
	f) 146-GB, 15,000-rpm, dual port, 6G	512744-001	Mandatory[1]
	g) 300-GB, 10,000-rpm, 6G	625271-001	Mandatory[1]
	h) 450-GB, 10,000-rpm, 6G	581310-001	Mandatory[1]
	i) 500-GB, 7,200-rpm, 6G	508009-001	Mandatory[1]
	j) 600-GB, 10,000-rpm, 6G	581311-001	Mandatory[1]
20	SATA drive*	—	—
	a) 120-GB, 3G	572253-001	Mandatory[1]
	b) 160-GB, 7,200-rpm, 3G	530932-001	Mandatory[1]
	c) 250-GB, 5,400-rpm, 3G	460426-001	Mandatory[1]
	d) 500-GB, 7,200-rpm, 3G	508035-001	Mandatory[1]
21	Solid-state drive*	—	—
	a) 60-GB, non-hot-plug SATA, 3G	572254-001	Mandatory[1]
	b) 60-GB, 3G	572252-001	Mandatory[1]
	c) 120-GB, non-hot-plug	572255-001	Mandatory[1]
	Options	—	—
22	PCI-X/PCI Express I/O expansion board	591204-001	Optional[2]
23	PCI Express I/O expansion board	591205-001	Optional[2]
24	Controller options	—	—
	a) Smart Array BBWC battery pack	398648-001	Optional[2]
	b) FBWC module, 512-MB*	578882-001	Optional[2]
	c) FBWC module, 1-GB*	505908-001	Optional[2]
	d) FBWC capacitor pack*	587324-001	Optional[2]
	e) BBWC cache module, 256-MB	462974-001	Optional[2]

Item	Description	Spare part number	Customer self repair (on page 5)
	f) BBWC cache module, 512-MB*	462975-001	Optional[2]
	g) BBWC battery pack*	462976-001	Optional[2]
25	Trusted Platform Module*	450168-001	No[3]
	Cables	—	—
26	Cable kit*	594765-001	Mandatory[1]
	a) Cable assembly, power, Systems Insight Display, UID*	—	Mandatory[1]
	b) Cable assembly, power, video, USB*	—	Mandatory[1]
	c) Cable assembly, power, UID, main*	—	Mandatory[1]
	d) Cable, power, SAS*	—	Mandatory[1]
	e) Cable assembly, DVD-ROM*	—	Mandatory[1]
	f) Cable assembly, SATA, solid state drive*	—	Mandatory[1]
	g) Cable assembly, power, fan*	—	Mandatory[1]
	h) Cable assembly, thermal sensor*	—	Mandatory[1]
27	Cable assembly, 5A BBWC battery*	409124-001	Mandatory[1]
28	Cable assembly, Mini SAS, 83.82-cm (33.00-in.)*	498426-001	Mandatory[1]
	Miscellaneous	—	—
29	Battery, 3V, lithium*	153099-001	Mandatory[1]
30	Rack mount kit, universal*	377839-001	Mandatory[1]

*Not shown

**When replacing the processor, you must also replace the heatsink assembly (591207-001).

†Be sure you are using the correct spare part when replacing the memory cartridge. The HP ProLiant DL580 G7 Server ships with one of two different memory cartridges, which are not interchangeable. Part number 647058-001 has a label that identifies it as an (E7) memory cartridge.

[1]Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

[2]Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

[3]No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

[1]Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

[1]Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.
[3]No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

[1]Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.
[2]Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.
[3]No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No" bzw. „Nein" gekennzeichnet.

[1]Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.
[3]No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

[1]Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
[2]Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.
[3]No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

[1]Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

[2]Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

[3]No: 否 — 某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

[1]Mandatory: 強制的 — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

[2]Optional: 選購的 — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

[3]No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

[1] Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

[2] Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

[3] No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- Torx T-15 screwdriver (provided with the server)
- Phillips screwdriver
- Flathead screwdriver
- Diagnostics Utility

Safety considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Preparation procedures

To access some components and perform certain service procedures, you must perform one or more of the following procedures:

- Power down the server (on page 26).

  If you must remove a server from a rack or a non-hot-plug component from a server, power down the server.

- Extend the server from the rack (on page 26).

  If you are performing service procedures in an HP, Compaq branded, telco, or third-party rack, you can use the locking feature of the rack rails to support the server and gain access to internal components.

  For more information about telco rack solutions, refer to the RackSolutions.com website (http://www.racksolutions.com/hp).

- Remove the server from the rack (on page 27).

  If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack.
- Remove the access panel (on page 28).

  If you are servicing internal components, remove the access panel.
- Remove the processor memory drawer shipping screws ("Processor memory drawer shipping screw locations" on page 28)
- Remove the processor memory drawer (on page 29)
- Remove the SPI board (on page 30)

Power down the server

WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

IMPORTANT: If installing a hot-plug device, it is not necessary to power down the server.

1. Back up the server data.
2. Shut down the operating system as directed by the operating system documentation.

   NOTE: If the operating system automatically places the server in Standby mode, omit the next step.
3. Press the Power On/Standby button to place the server in Standby mode. When the server activates Standby power mode, the system power LED changes to amber.

   IMPORTANT: Pressing the UID button illuminates the blue UID LEDs on the front and rear panels. In a rack environment, this feature facilitates locating a server when moving between the front and rear of the rack.
4. Disconnect the power cords.

The system is now without power.

Extend the server from the rack

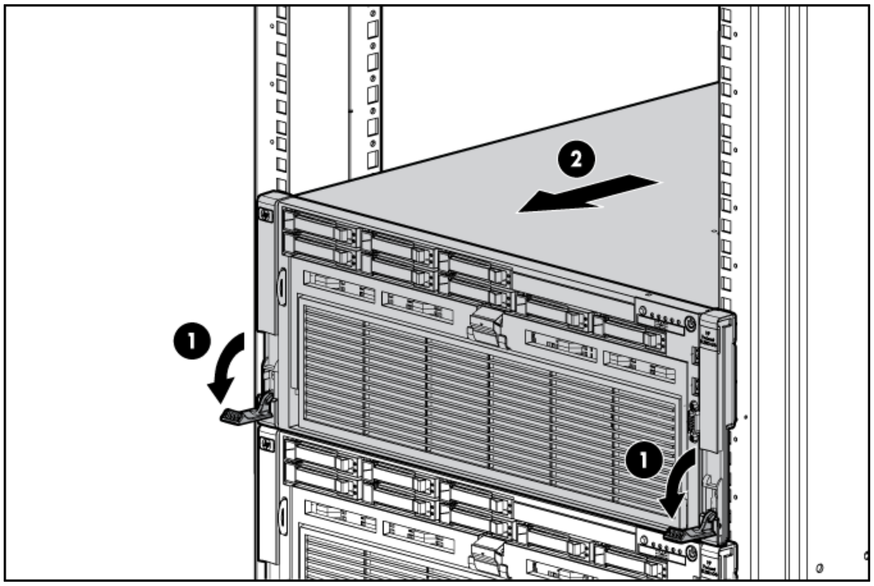
WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

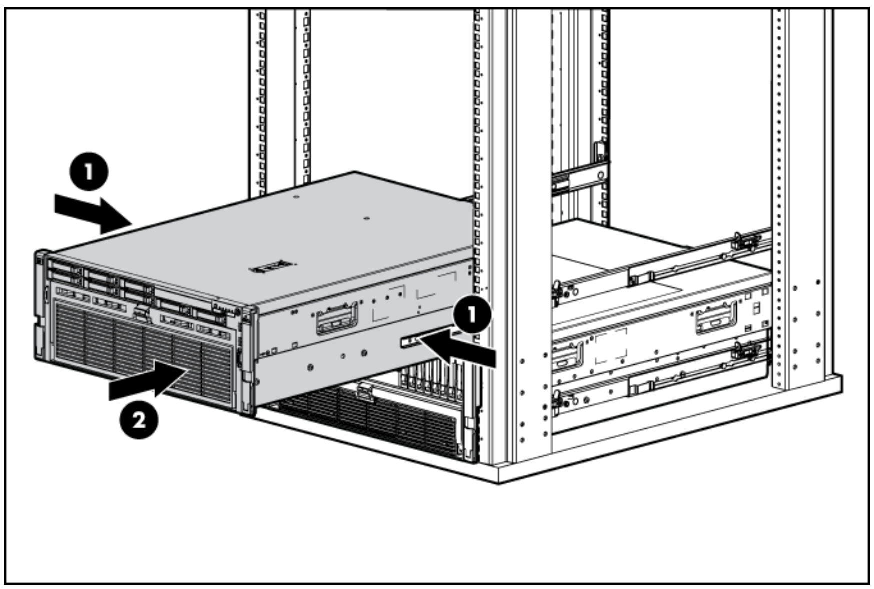
To extend the server from the rack:

1. Pull down the quick-release levers on each side of the server to release the server from the rack.

2. Extend the server on the rack rails until the server rail-release latches engage.



3. After performing the installation or maintenance procedure, slide the server into the rack by pressing the server rail-release latches.



Remove the server from the rack

⚠ **WARNING:** The server weighs approximately 36.3 kg–49.9 kg (80.0 lb–110.0 lb). To reduce the risk of injury, remove the following components before removing the server from the rack:

- Processor memory drawer ("Remove the processor memory drawer" on page 29)
- Hard drives ("SAS/SATA hard drive" on page 30)
- Power supplies ("Hot-plug power supply" on page 47)

The server weighs 21.8 kg (48.0 lb) with these components removed. Two people might be required to remove the server from the rack.

1. Power down the server (on page 26).

2. Remove the following components to reduce the weight of the server:
   - Processor memory drawer ("Remove the processor memory drawer" on page 29)
   - Hard drives ("SAS/SATA hard drive" on page 30)
   - Power supplies ("Hot-plug power supply" on page 47)
3. Disconnect the cabling, and remove the server from the rack. For more information, see the documentation that ships with the rack mounting option.
4. Place the server on a sturdy, level surface.

Remove the access panel

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

To remove the component:

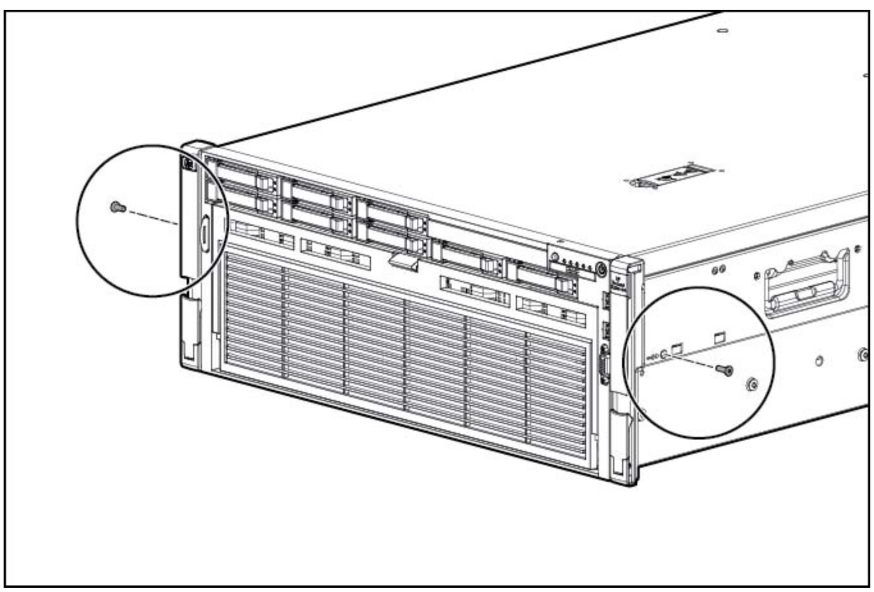
1. Do one of the following:
   - Open or remove the tower bezel, as needed.
   - Extend the server from the rack (on page 26).
2. Open the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.

   If the locking latch is locked, use a T-15 Torx screwdriver to unlock the latch.

To replace the component, reverse the removal procedure.

Processor memory drawer shipping screw locations

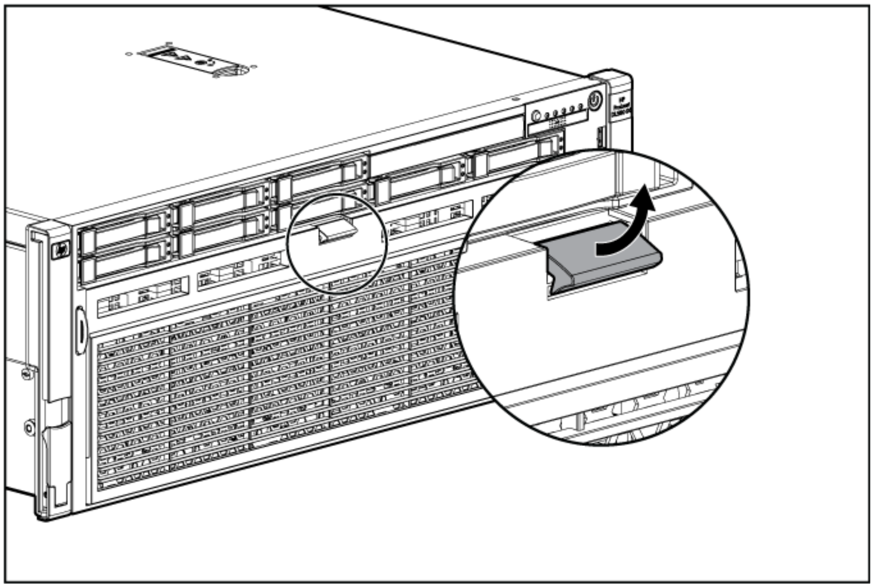
Two orange shipping screws secure the processor memory drawer in place during shipping. You must remove the screws to access the processor memory drawer. Retain the screws for future use.



Remove the processor memory drawer

To remove the component:

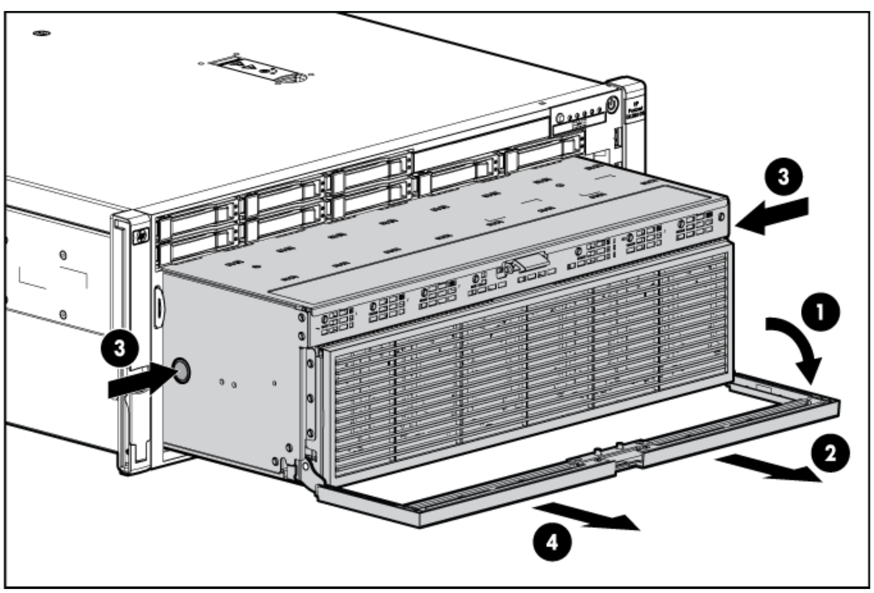
1. Power down the server (on page 26).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
3. Release the latches on the release lever.



4. Lower the handle, and then extend the processor memory drawer from the server until the release latches catch.

⚠ **WARNING:** The processor memory drawer weighs more than 11.3 kg (25.0 lb). Use extra caution when removing and replacing the processor memory drawer.

5. Firmly holding the processor memory drawer, press the release buttons and then remove the drawer from the server.



To replace the component, reverse the removal procedure.

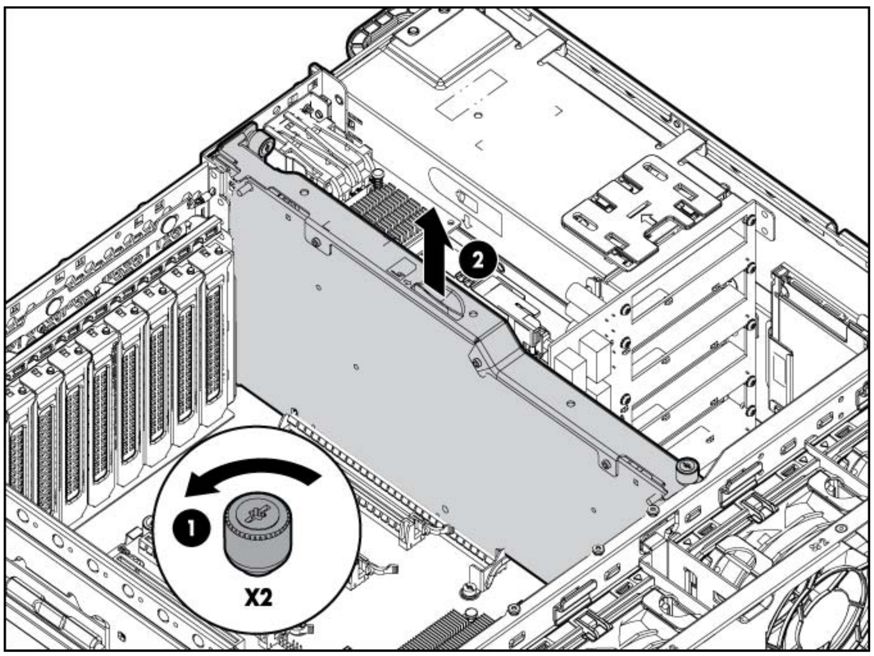
Remove the SPI board

To remove the component:

1. Power off the server.
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Disconnect all cables from the SPI board.

> **IMPORTANT:** If replacing the SPI board or clearing NVRAM, you must re-enter the server serial number through RBSU.

5. Raise the levers, and lift the SPI board from the server.



6. Remove all components from the failed SPI board.

To replace the component, reverse the removal procedure.

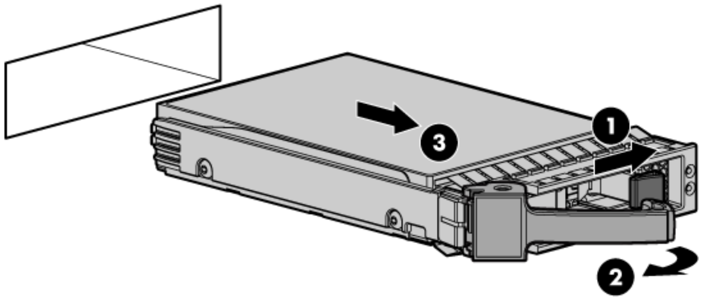
SAS/SATA hard drive

> **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To remove the component:

1. Determine the status of the drive from the hot-plug SAS hard drive LED combinations ("Hard drive LED combinations" on page 84).
2. Back up all server data on the hard drive.

3. Remove the hard drive.



To replace the component, reverse the removal procedure.

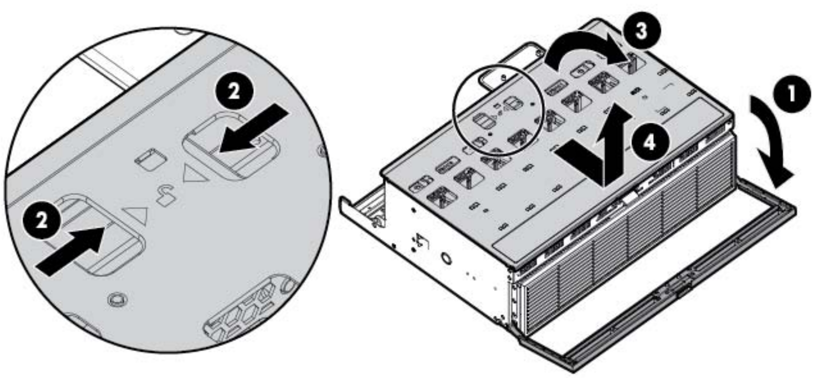
Heatsink

To remove the component:

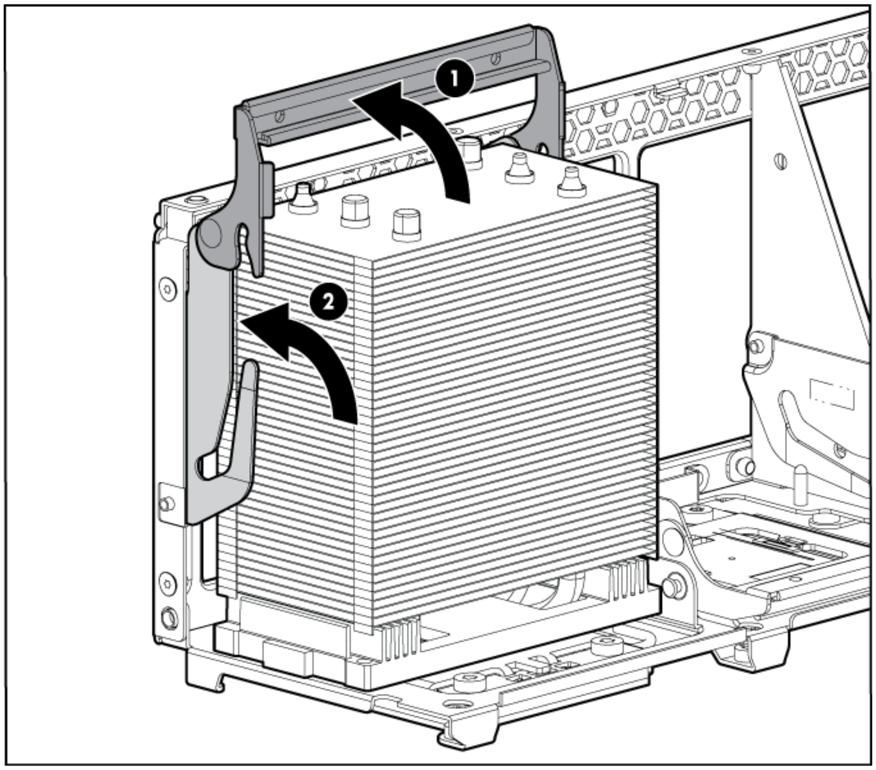
1. Power down the server (on page 26).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
3. Remove the processor memory drawer (on page 29).

> **CAUTION:** To prevent damage to the processor memory drawer cover, be sure the handle of the processor memory drawer is fully open before removing the cover.

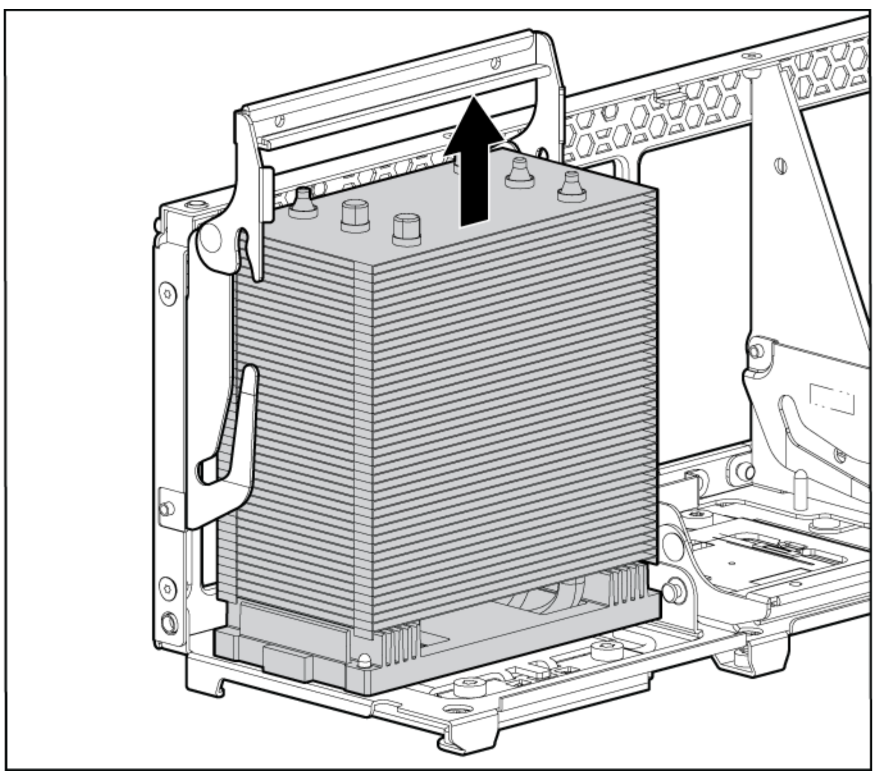
4. Be sure the handle on the processor memory drawer is completely open, and then remove the processor memory drawer cover.



5. Open the processor retaining bracket.



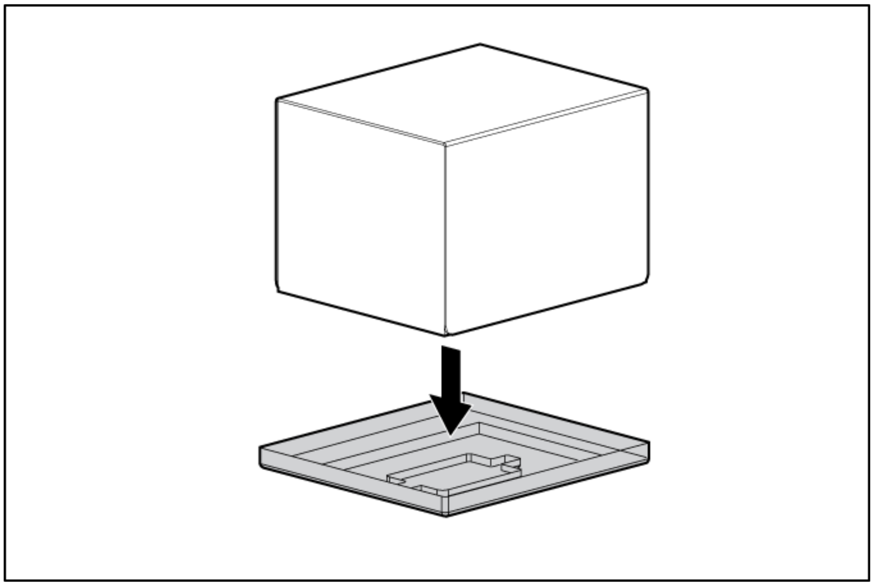
6. Remove the heatsink.



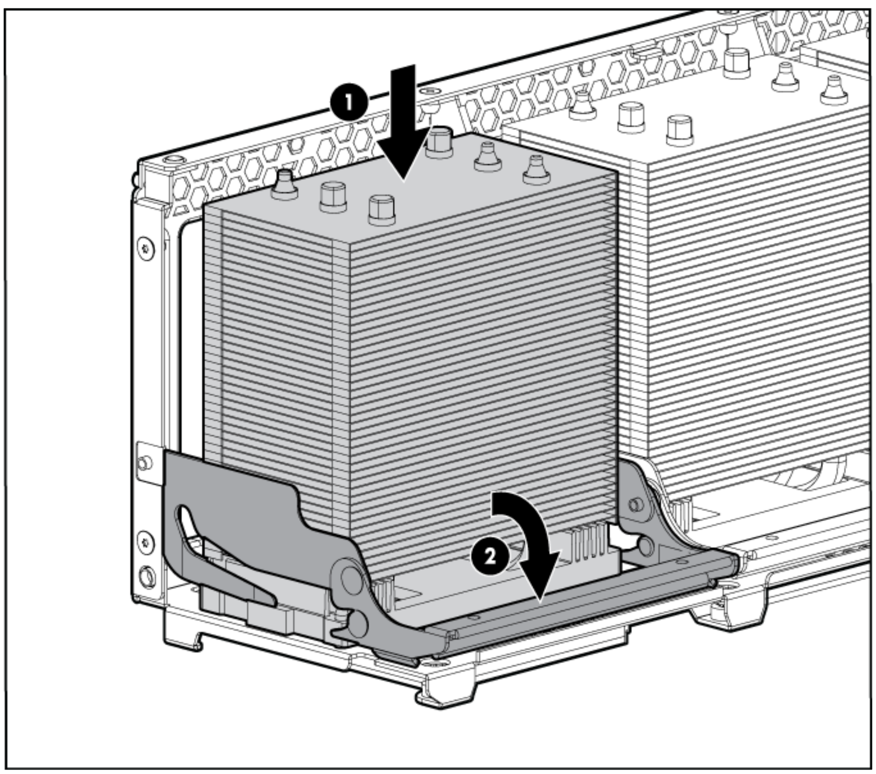
To replace the component:

1. Clean the old thermal grease from the top of the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.

2. Remove the heatsink protective cover.



3. Install the heatsink.
4. Close and lock the processor retaining bracket.



5. Install the processor memory drawer cover.
6. Install the processor memory drawer.
7. Power up the server.

Processor

⚠ **WARNING:** Use caution when installing the processor memory module or removing the processor memory module. The processor memory module is very heavy when fully populated.

△ **CAUTION:** To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

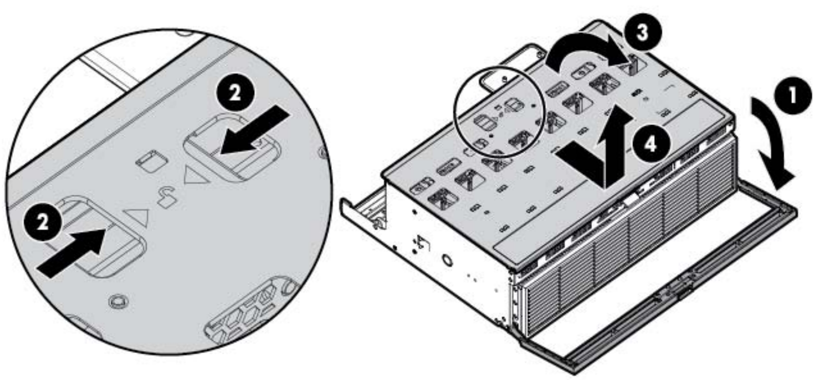
IMPORTANT: When either optional I/O expansion board in installed in a two-processor configuration, the second processor must be installed in socket 3.

To remove the component:

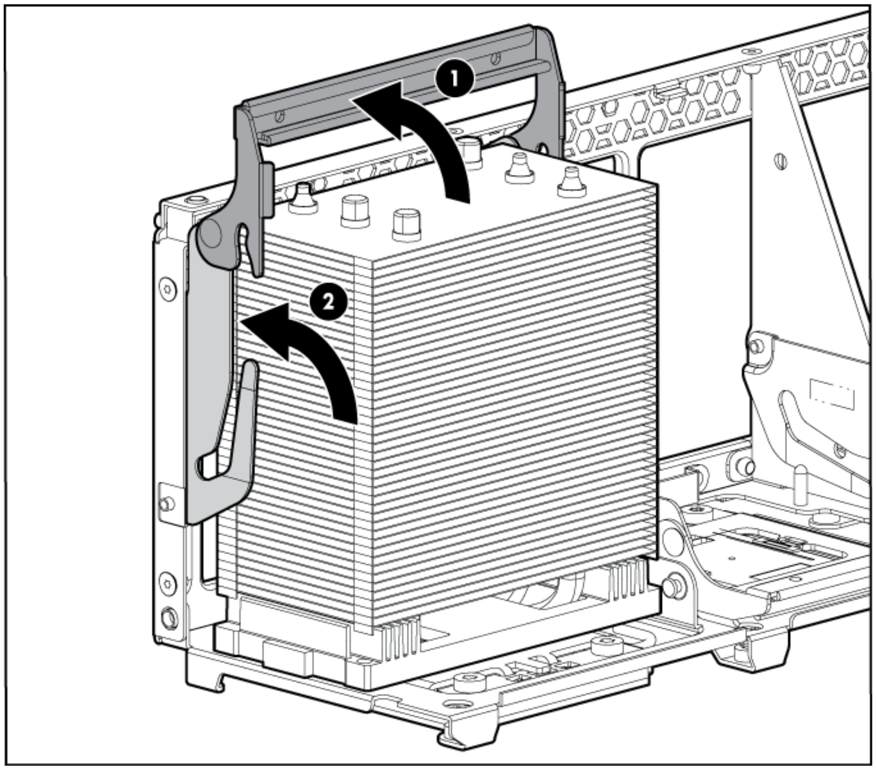
1. Power down the server (on page 26).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
3. Remove the processor memory drawer (on page 29).

△ **CAUTION:** To prevent damage to the processor memory drawer cover, be sure the handle of the processor memory drawer is fully open before removing the cover.

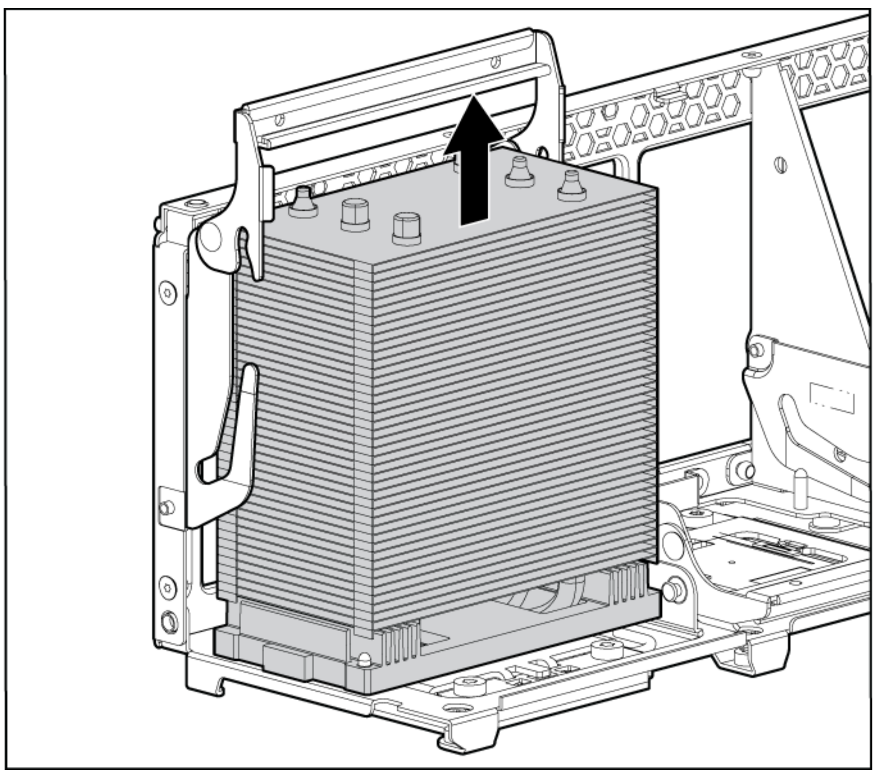
4. Remove the processor memory drawer cover.



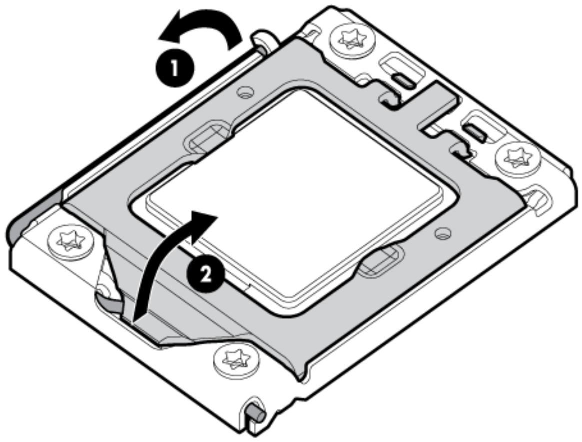
5. Open the processor retaining bracket.



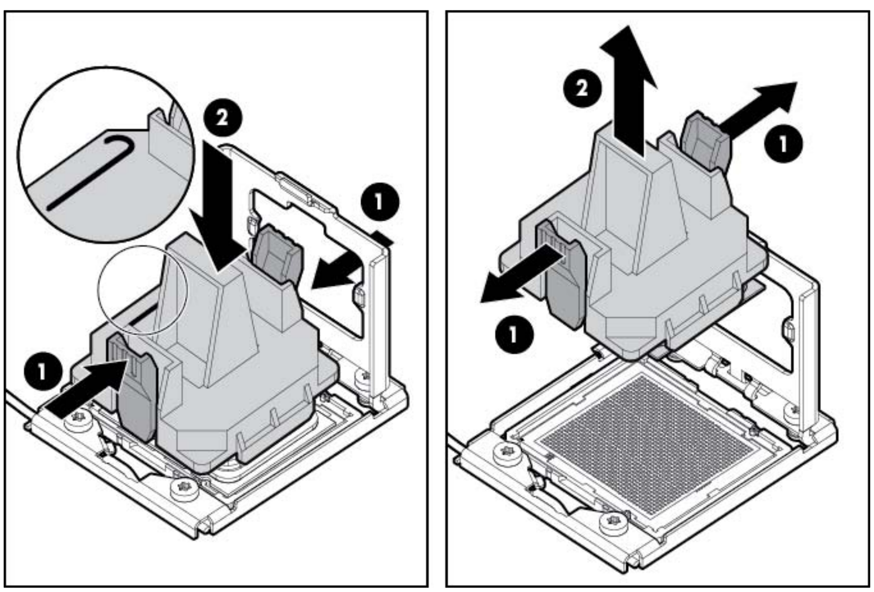
6. Remove the heatsink.



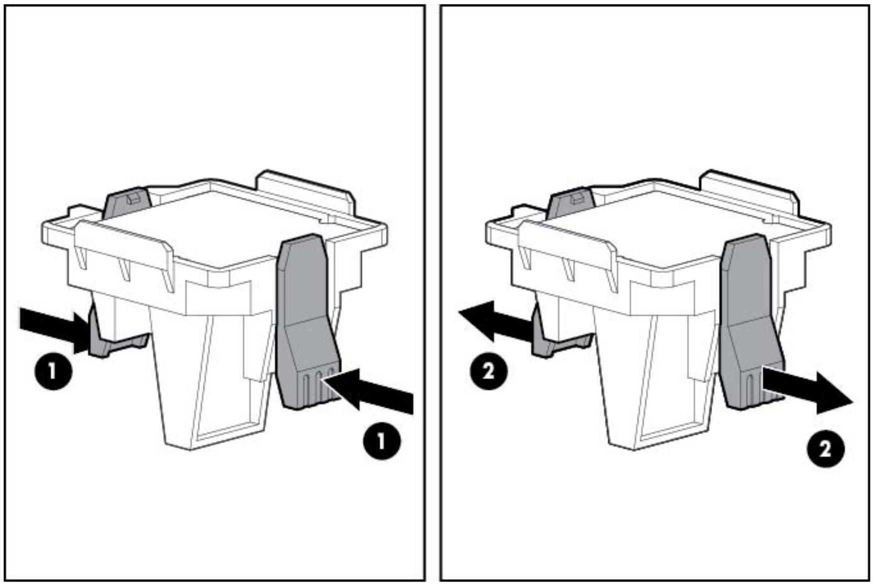
7. Open the processor locking lever and the processor socket retaining bracket.



8. Using the processor tool, remove the processor from the system board:
   a. Line up the processor tool, ensuring the locking lever graphic on the tool is oriented correctly.
   b. Press in on the plastic tabs, and then place the tool on the processor.
   c. Release the tabs, and then carefully lift the processor and tool straight up.



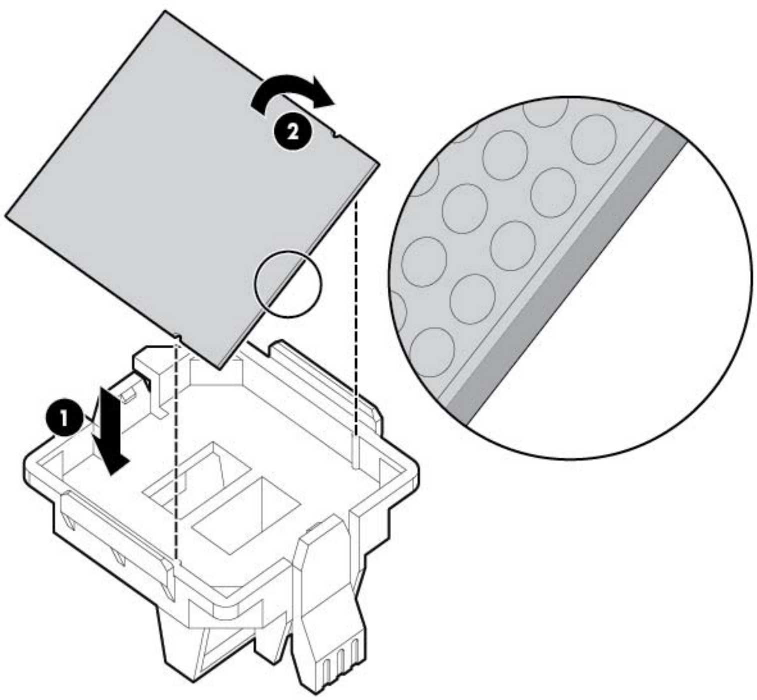
9. Carefully rotate the tool, and then push in and release the tabs to secure the processor in the tool.



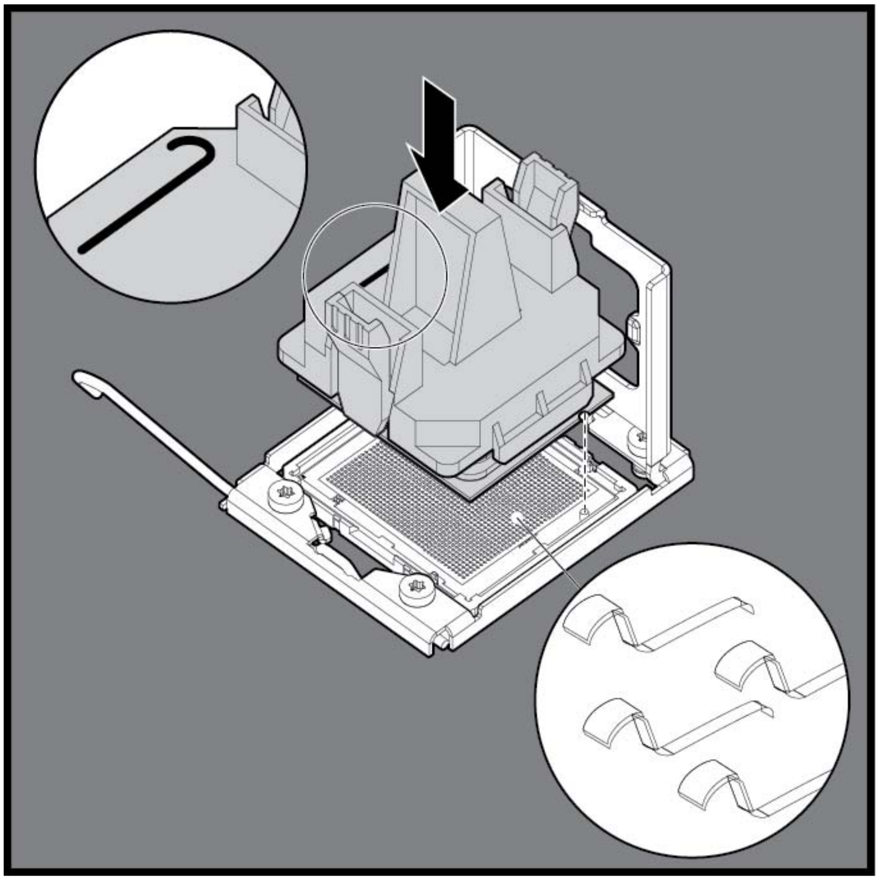
△ **CAUTION:** To avoid damage to the processor, do not touch the bottom of the processor, especially the contact area.

To replace the component:

1. Carefully insert the processor into the processor installation tool. Handle the processor by the edges only, and do not touch the bottom of the processor, especially the contact area.



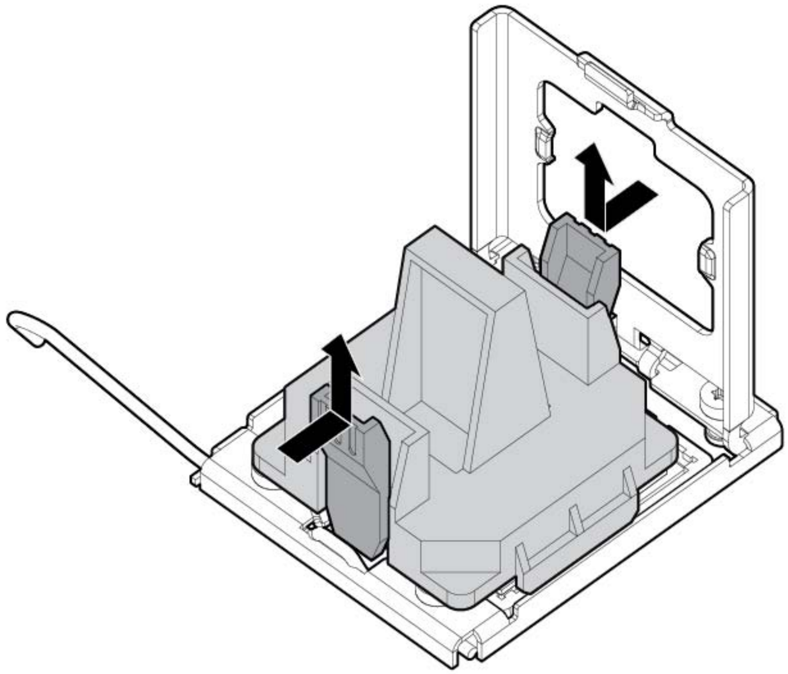
2. Be sure the tool is oriented correctly. Align the processor installation tool with the socket, and then install the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED**.



△ **CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.** To avoid damage to the system board:

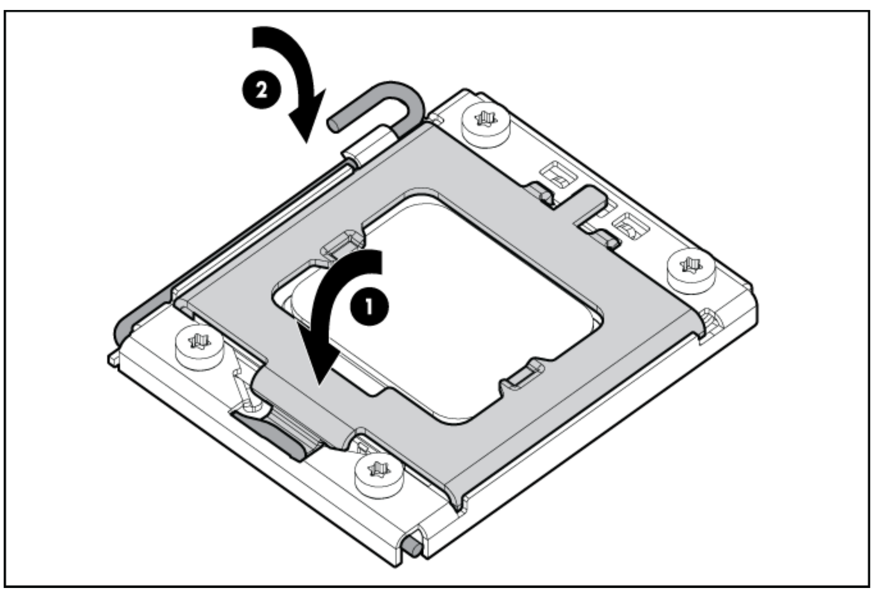
- Never install or remove a processor without using the processor installation tool.
- Do not touch the processor socket contacts.
- Do not tilt or slide the processor when lowering the processor into the socket.

3. Press and hold the tabs on the processor installation tool to separate it from the processor, and then remove the tool.



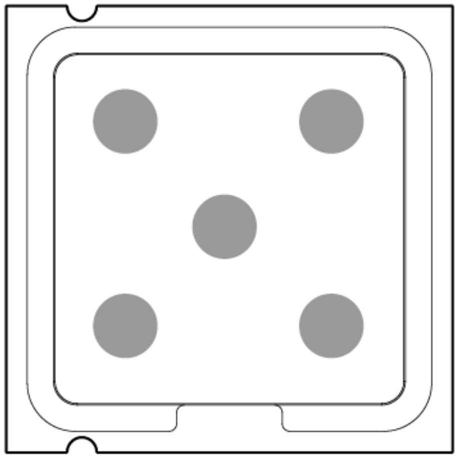
4. Close the processor socket retaining bracket and the processor locking lever.

> **CAUTION:** Be sure to close the processor socket retaining bracket before closing the processor locking lever. The lever should close without resistance. Forcing the lever closed can damage the processor and socket, requiring system board replacement.

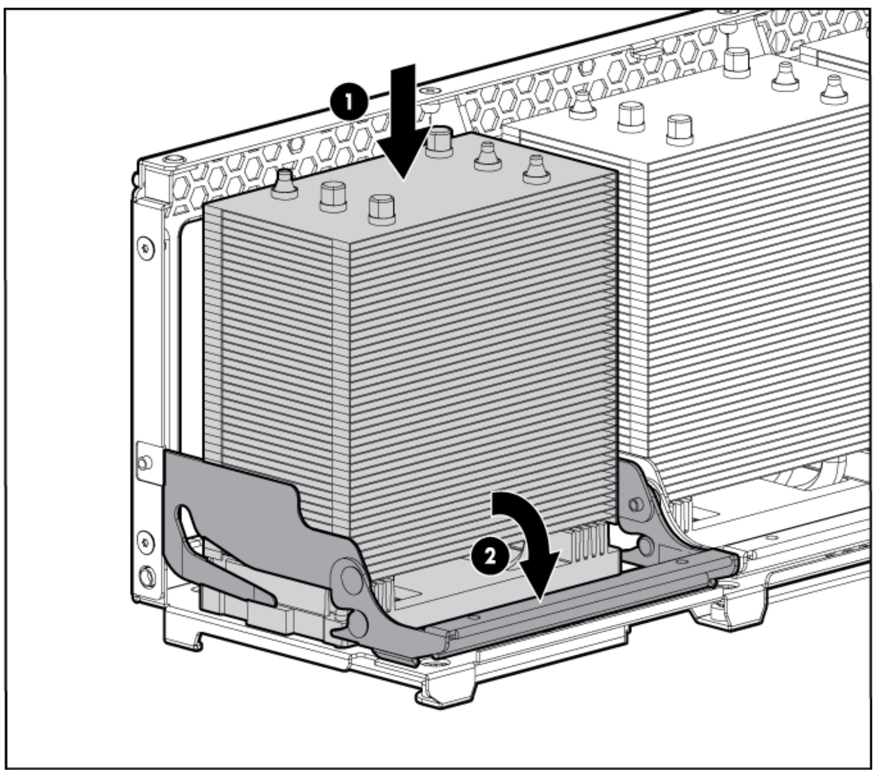


5. Clean the old thermal grease from the heatsink with the alcohol swab. Allow the alcohol to evaporate before continuing.

6. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



7. Install the heatsink.
8. Close and lock the processor retaining bracket.



9. Install the processor memory drawer cover.
10. Install the processor memory drawer.
11. Power up the server.

Memory cartridge

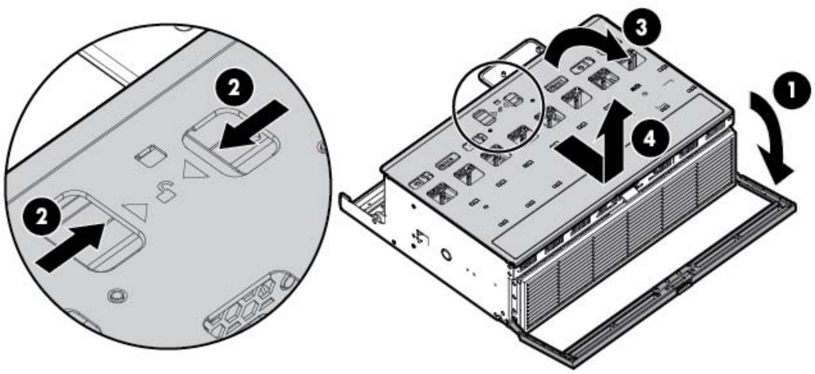
To remove the component:

IMPORTANT: Be sure you are using the correct spare part number when replacing the memory cartridge. The server ships with one of two different memory cartridges, which are not interchangeable.

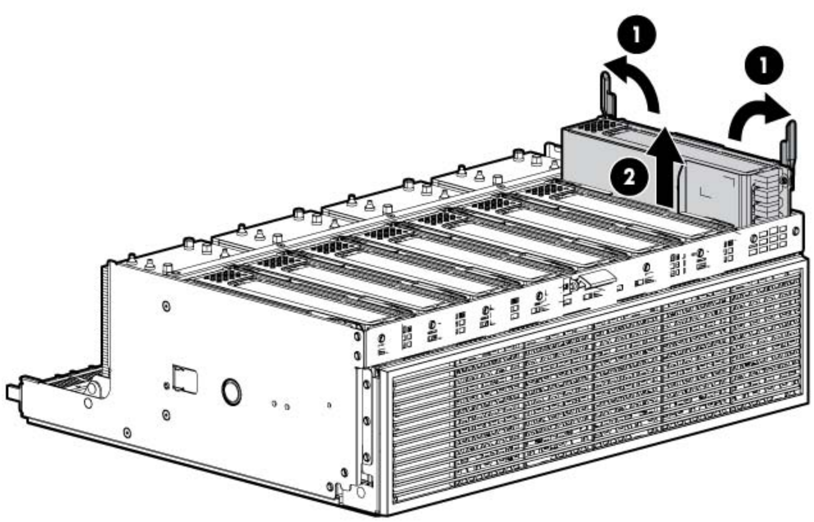
1. Power down the server (on page 26).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
3. Remove the processor memory drawer (on page 29).

CAUTION: To prevent damage to the processor memory drawer cover, be sure the handle of the processor memory drawer is fully open before removing the cover.

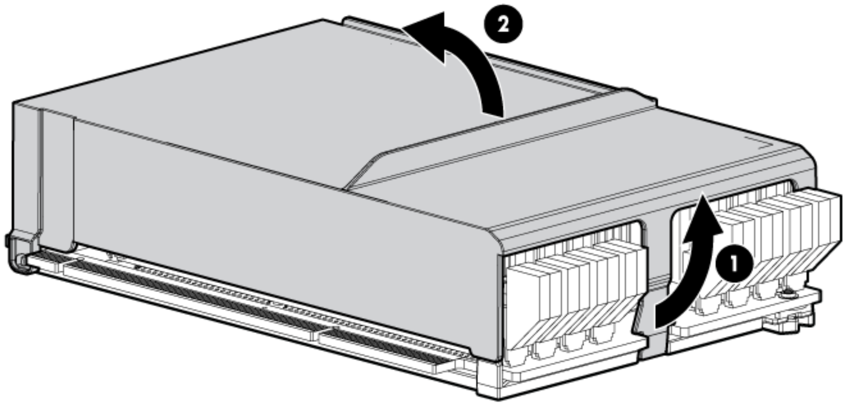
4. Be sure the handle on the processor memory drawer is completely open, and then remove the processor memory drawer cover.



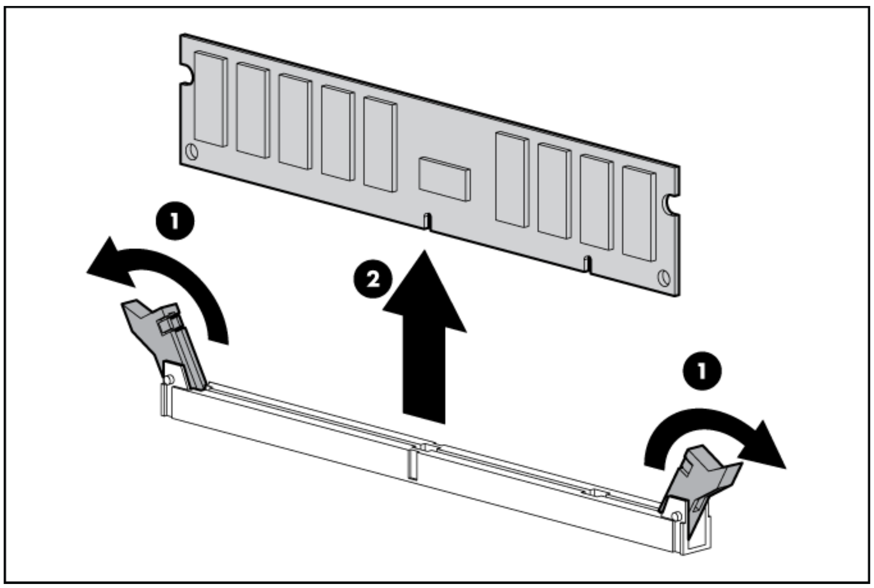
5. Remove the failed memory cartridge.



6. Open the memory cartridge cover.



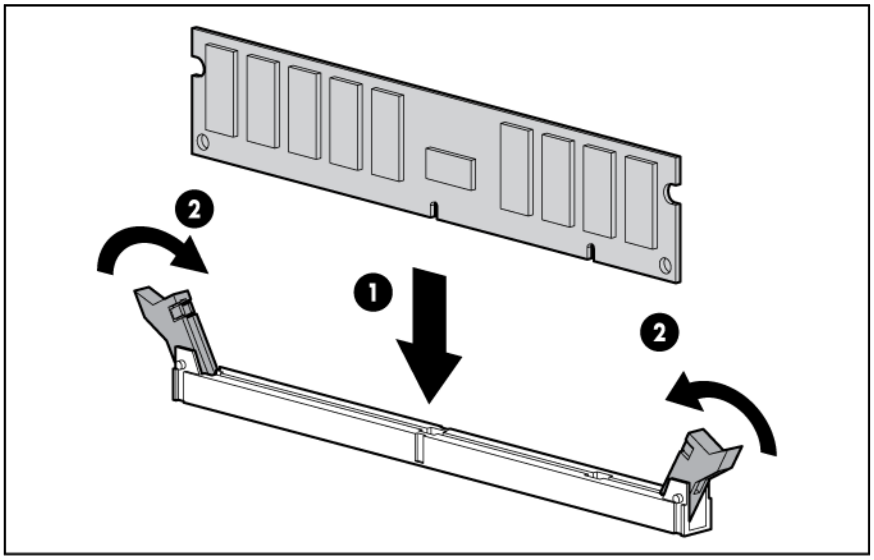
7. Remove the DIMMs from the failed memory cartridge:
    a. Open the DIMM slot latches.
    b. Remove the DIMM.



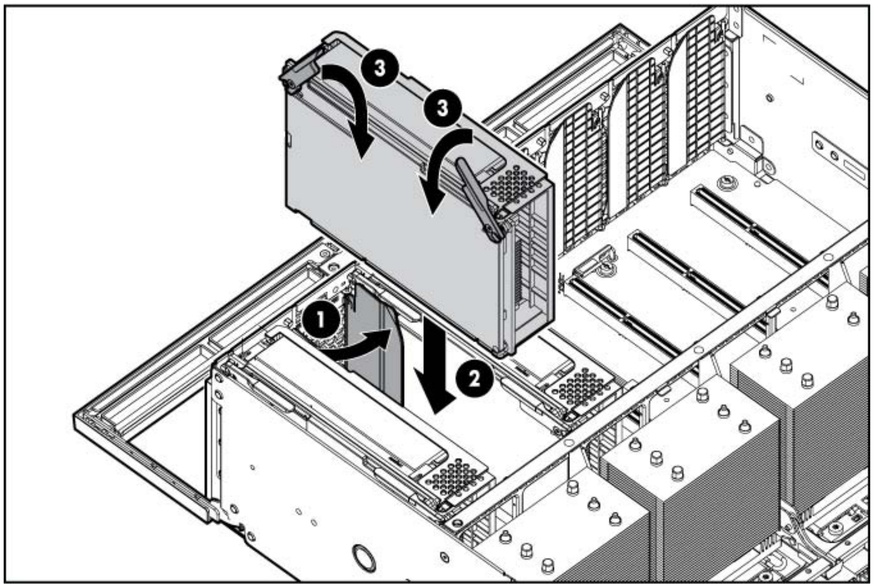
To replace the component:

1. Install the DIMMs in the replacement memory cartridge:
    a. Open the DIMM slot latches.

b. Install the DIMM.



2. Close the memory cartridge cover.
3. Install the memory cartridge.



4. Install the processor memory drawer cover.
5. Install the processor memory drawer.
6. Power up the server.

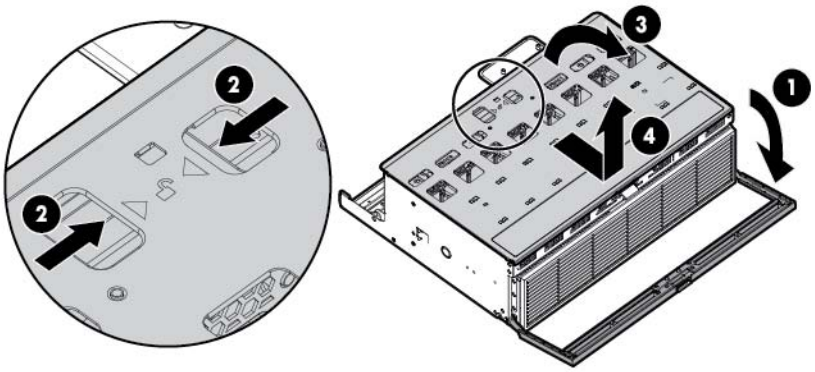
DIMMs

To remove the component:

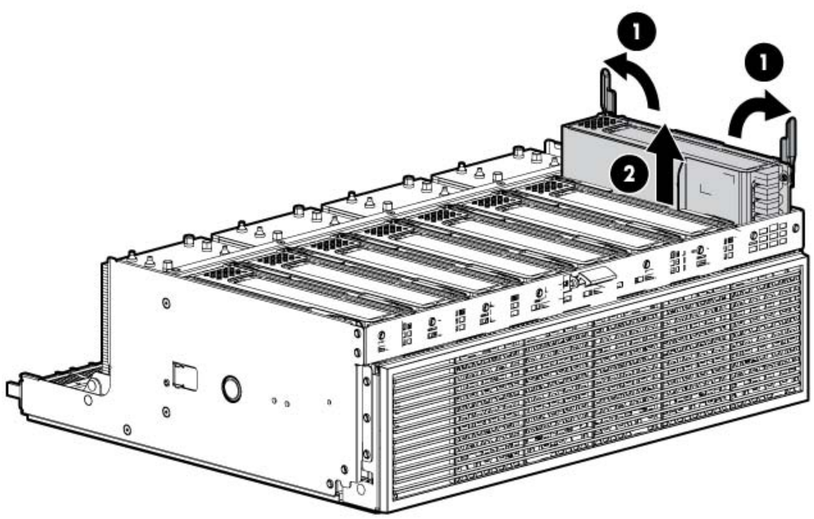
1. Power down the server (on page 26).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
3. Remove the processor memory drawer (on page 29).

> **CAUTION:** To prevent damage to the processor memory drawer cover, be sure the handle of the processor memory drawer is fully open before removing the cover.

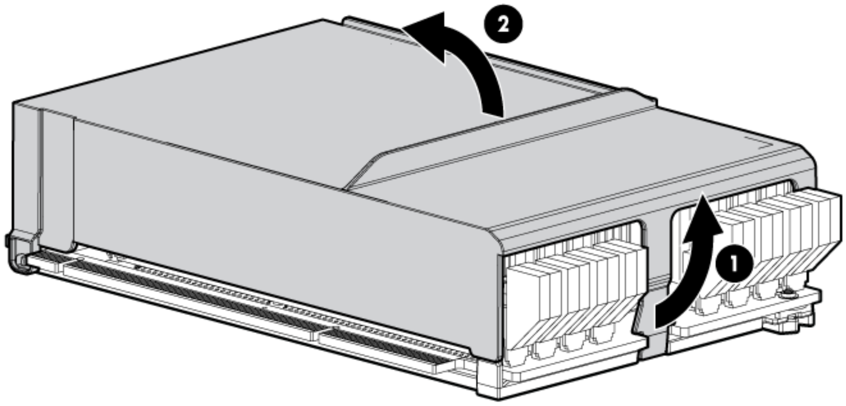
4. Be sure the handle on the processor memory drawer is completely open, and then remove the processor memory drawer cover.



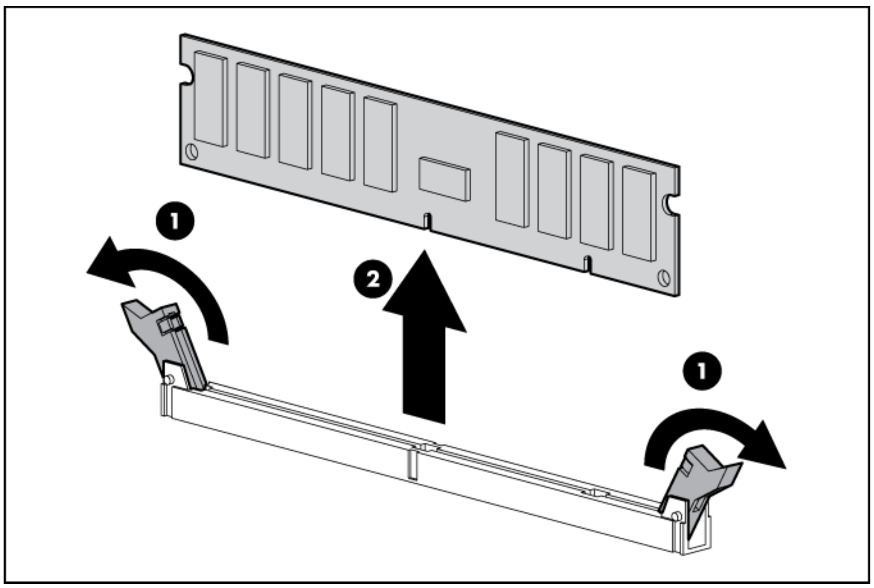
5. Remove the memory cartridge.



6. Open the memory cartridge cover.



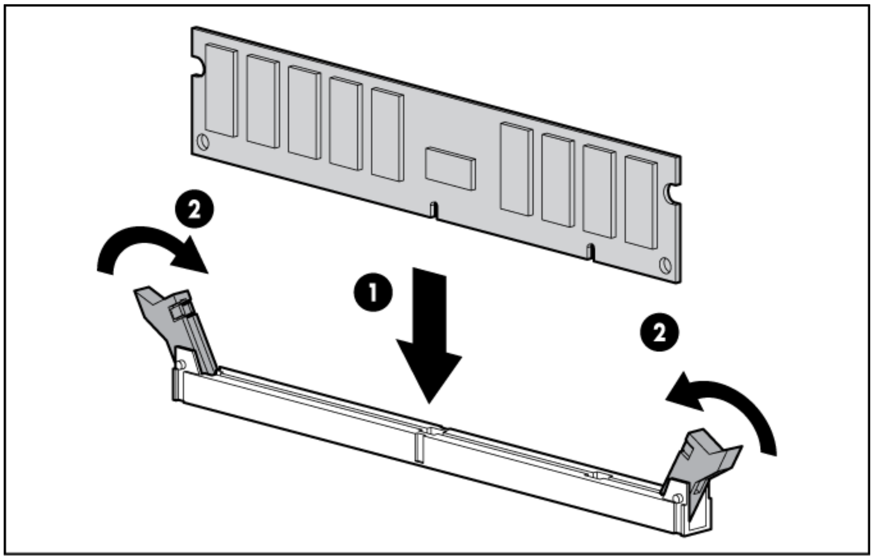
7. Remove the failed DIMM from the memory cartridge:
   a. Open the DIMM slot latches.
   b. Remove the DIMM.



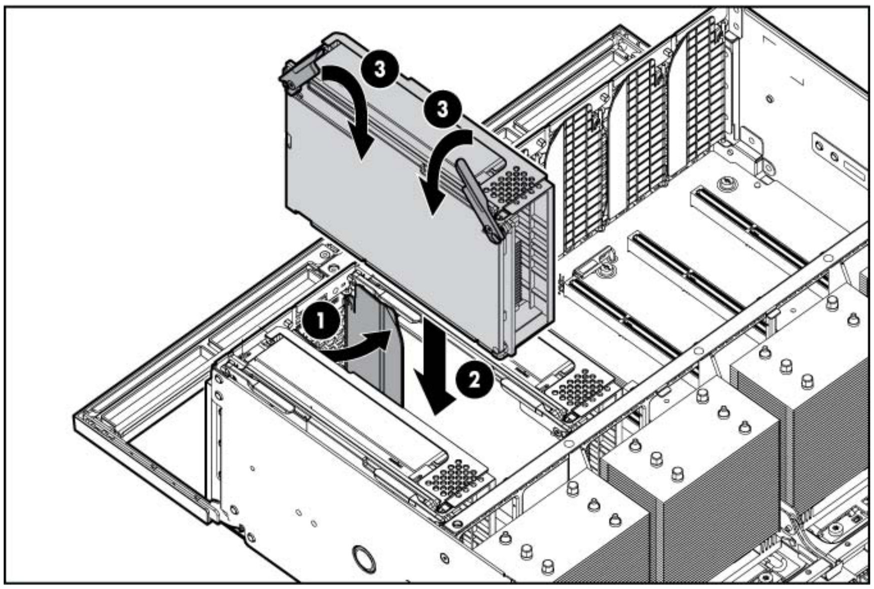
To replace the component:

1. Install the replacement DIMM in the memory cartridge:
   a. Open the DIMM slot latches.

b. Install the DIMM.



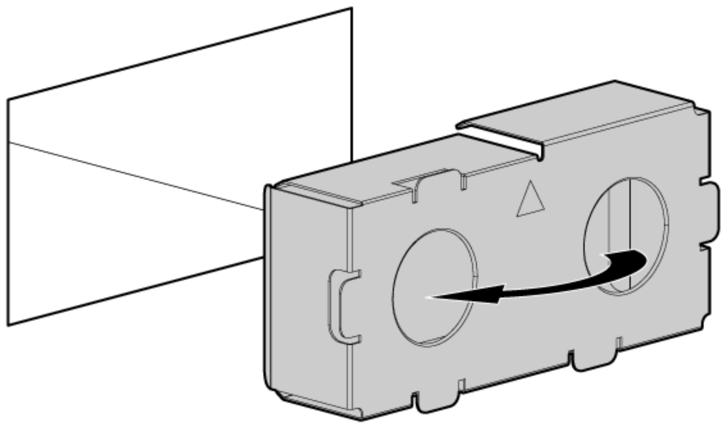
2. Close the memory cartridge cover.
3. Install the memory cartridge.



4. Install the processor memory drawer cover.
5. Install the processor memory drawer.
6. Power up the server.

Power supply blank

Remove the component as indicated.



To replace the component, reverse the removal procedure.

Hot-plug power supply

The server supports up to four hot-plug power supplies. Install all power supplies to provide full redundancy.

HP recommends installing redundant hot-plug power supplies in pairs.

To confirm the redundancy of your configuration, see the HP power advisor at the HP website (http://www.hp.com/go/hppoweradvisor).

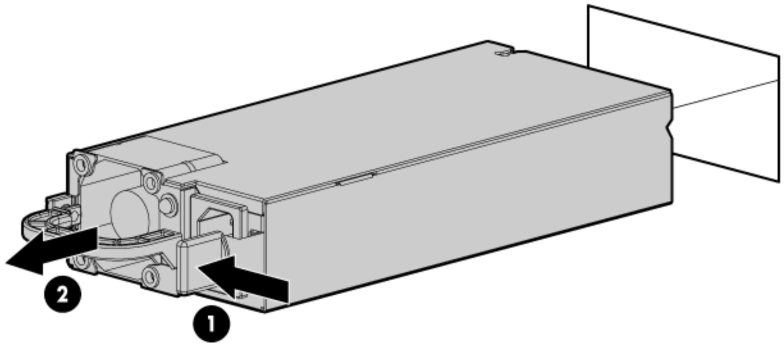
⚠ **WARNING:** To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

To remove the component:

1. Disconnect the power cord from the failed power supply.

2. Remove the failed power supply.



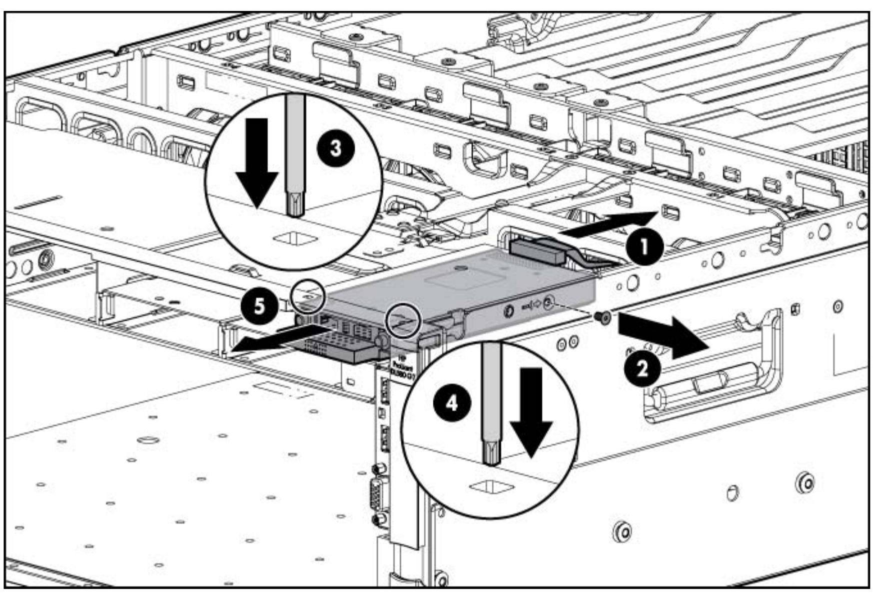
To replace the component, reverse the removal procedure.

Systems Insight Display assembly

> **CAUTION:** When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Disconnect the cable from the rear of the Systems Insight Display assembly.
5. Using a T-10 Torx screwdriver, release the locking latches on the SID bezel.
6. Remove the retaining screws.
7. Remove the Systems Insight Display assembly.

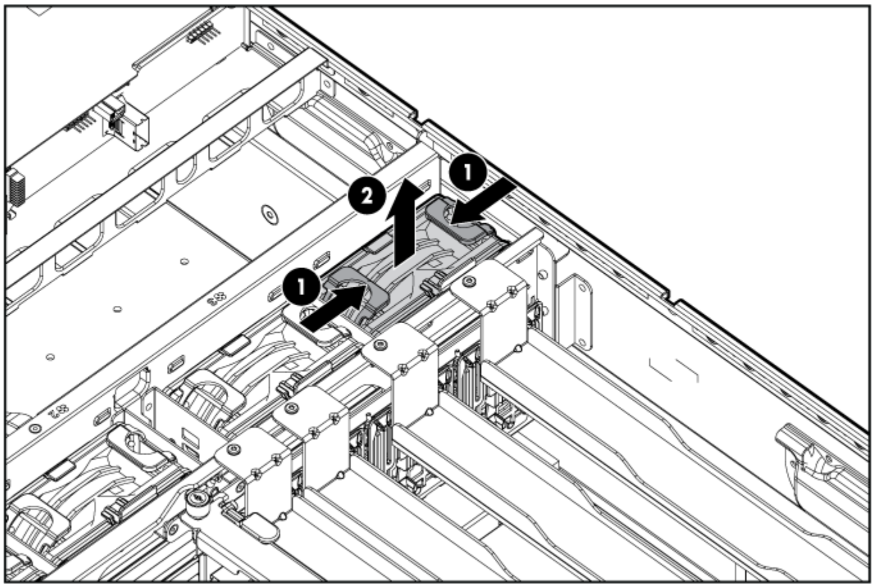


To replace the component, reverse the removal procedure.

Fan

To remove the component:

1. Extend the server from the rack (on page 26).
2. Remove the access panel (on page 28).
3. Remove the failed fan.



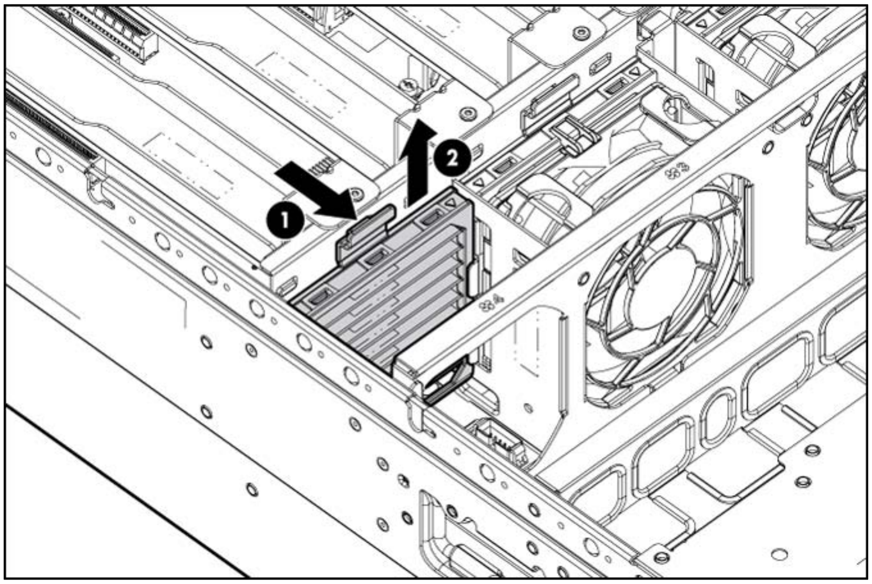
To replace the component, reverse the removal procedure.

Fan louver

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Remove the fan ("Fan" on page 49).

5. Remove the fan louver.



> △ **CAUTION:** Do not operate the server unless a fan louver is installed next to fans 1 and 4. If these louvers are not installed, the server overheats.

To replace the component, reverse the removal procedure.

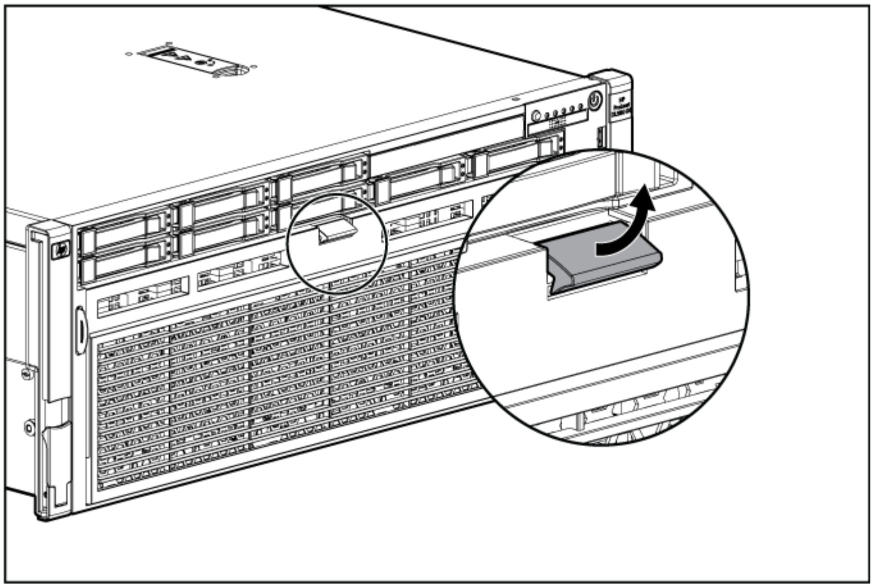
I/O expansion board

> △ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all expansion slots have either an expansion slot cover or an expansion board installed.

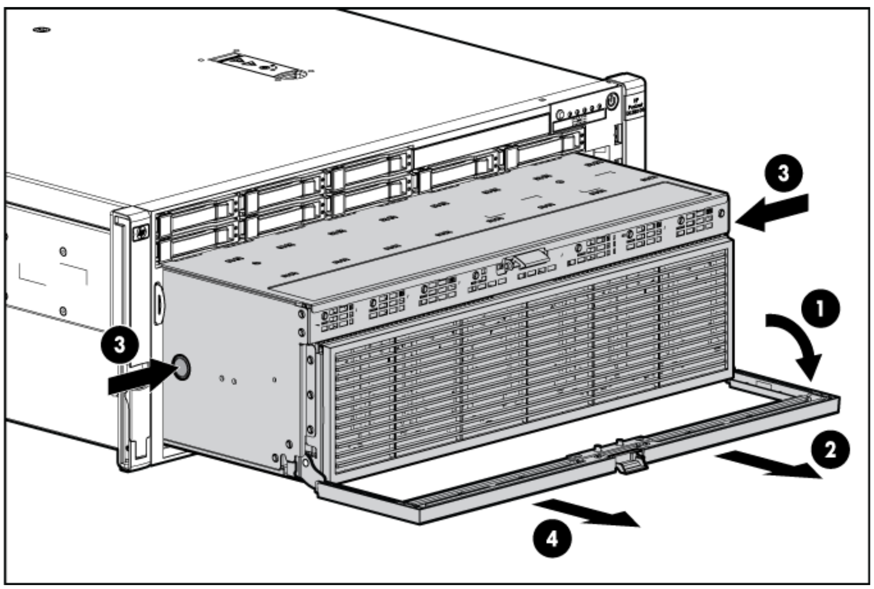
> **IMPORTANT:** When either optional I/O expansion board in installed in a two-processor configuration, the second processor must be installed in socket 3.

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).

4. Release the latches on the release lever.

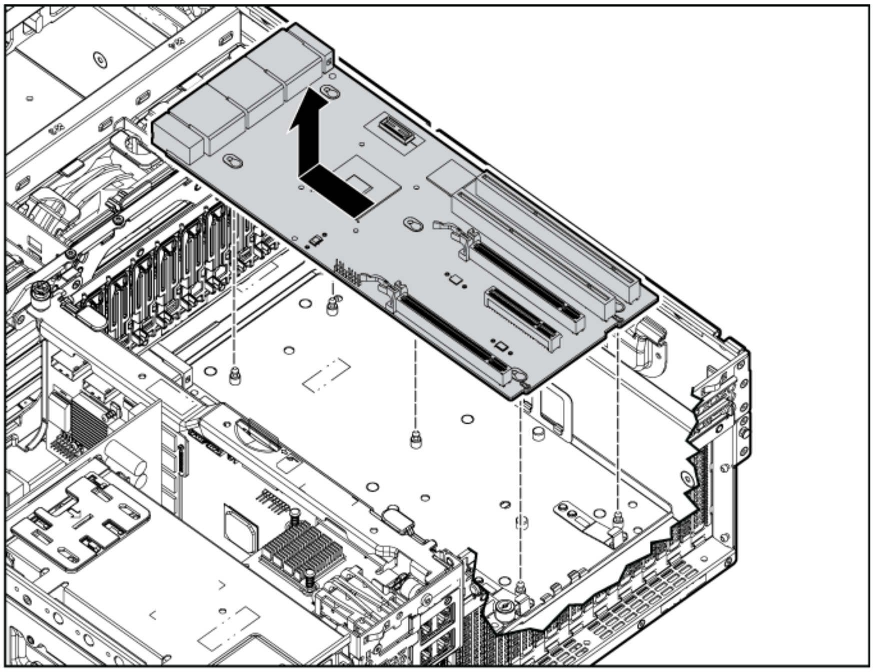


5. Lower the handle, and then extend the processor memory drawer from the server until the release latches catch.

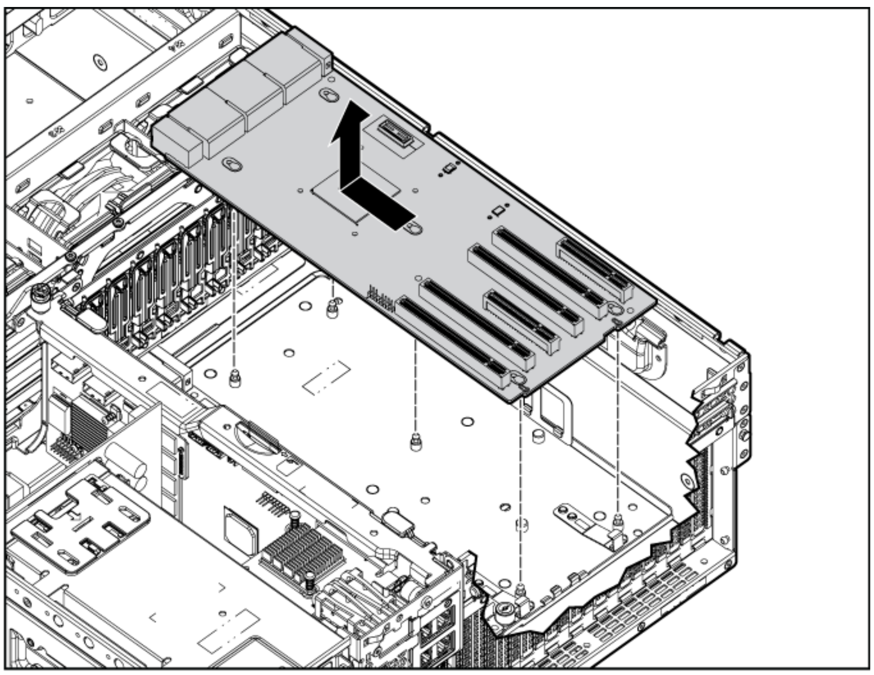


6. Remove the access panel (on page 28).
7. Remove any expansion boards from the failed I/O expansion board ("Non-hot-plug expansion board" on page 55).
8. Remove the I/O expansion board:

- PCI-X/PCIe Express I/O expansion board



- PCIe Express I/O expansion board



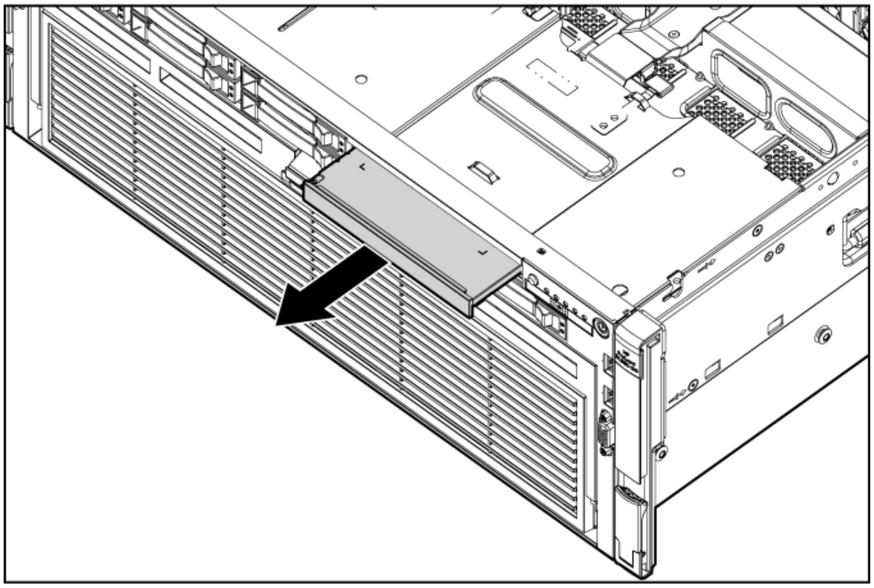
To replace the component, reverse the removal procedure.

DVD-ROM drive

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).

3. Remove the access panel (on page 28).
4. Disconnect the cable from the rear of the DVD-ROM drive.
5. Remove the DVD-ROM drive.

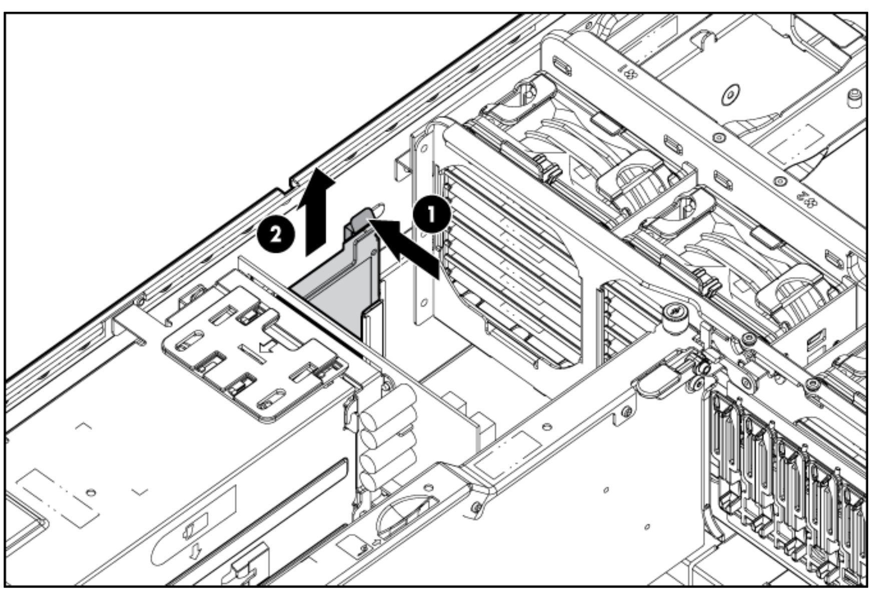


To replace the component, reverse the removal procedure.

Solid state drive

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Disconnect the cable from the solid state drive.
5. Remove the solid state drive.

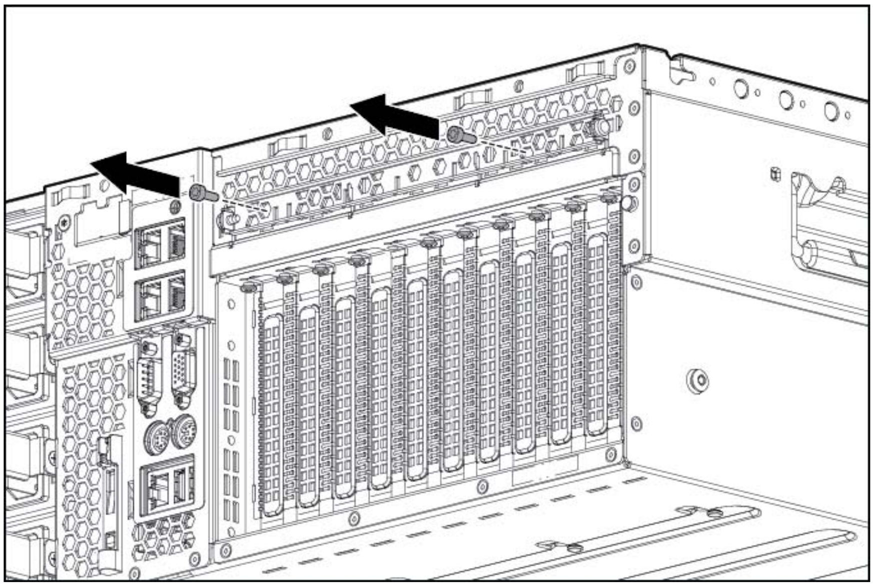


To replace the component, reverse the removal procedure.

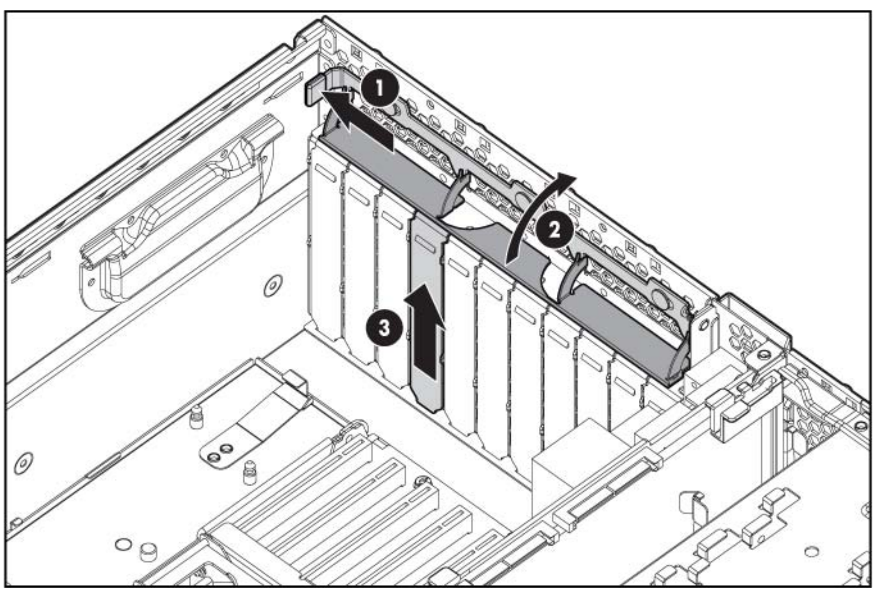
Expansion slot cover

△ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all expansion slots have either an expansion slot cover or an expansion board installed.

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Remove the shipping screws.



5. Open the latch, and remove the expansion slot cover.



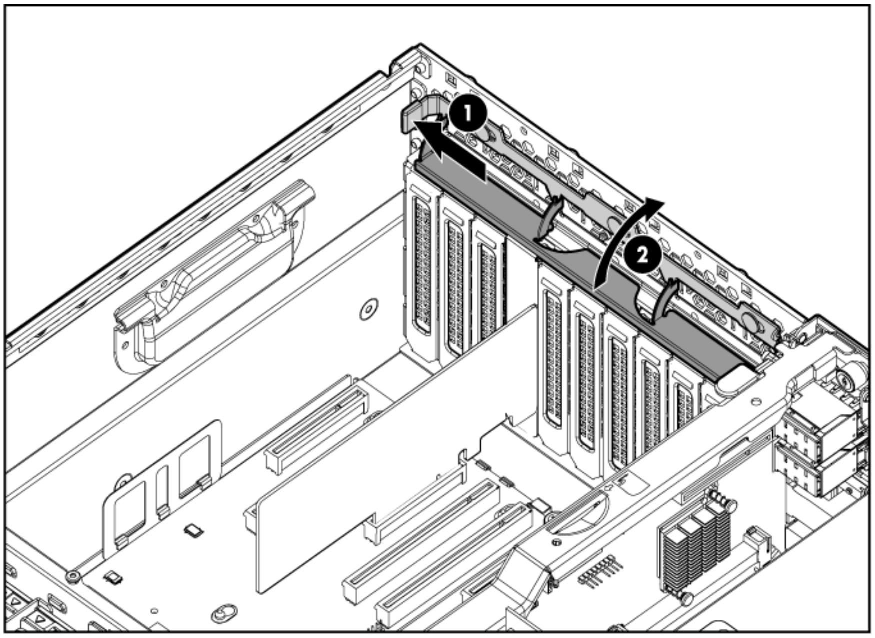
To replace the component, reverse the removal procedure.

Non-hot-plug expansion board

△ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all expansion slots have either an expansion slot cover or an expansion board installed.

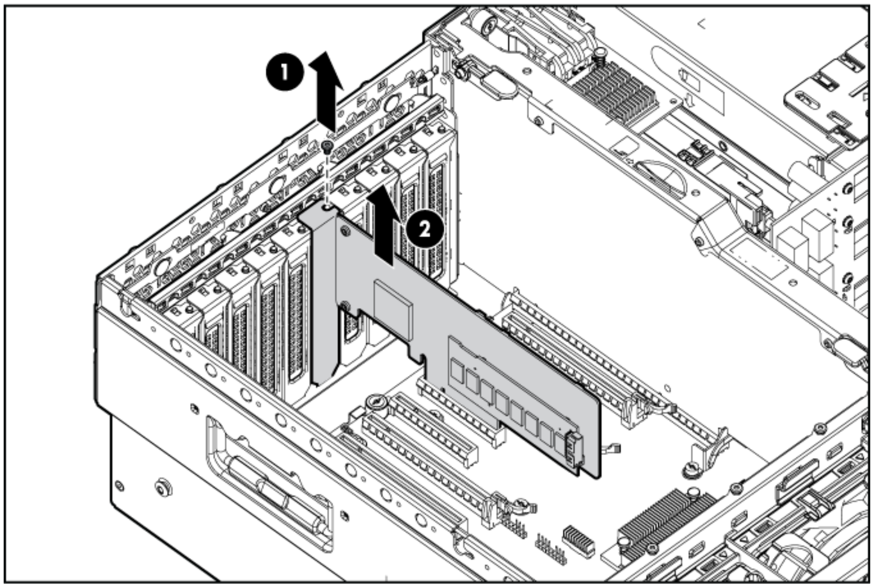
To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Open the expansion slot latch.



5. Disconnect any cables attached to the expansion board.
6. Remove the retaining screw, if installed.

7. Remove the expansion board.



To replace the component, reverse the removal procedure.

Battery-backed write cache procedures

Two types of procedures are provided for the BBWC option:

- Removal and replacement of failed components:
  - Removing the cache module ("Removing the BBWC cache module" on page 56)
  - Removing the battery pack ("Removing the BBWC battery pack" on page 57)
- Recovery of cached data from a failed server ("Recovering data from the battery-backed write cache" on page 58)

> **CAUTION:** Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

Removing the BBWC cache module

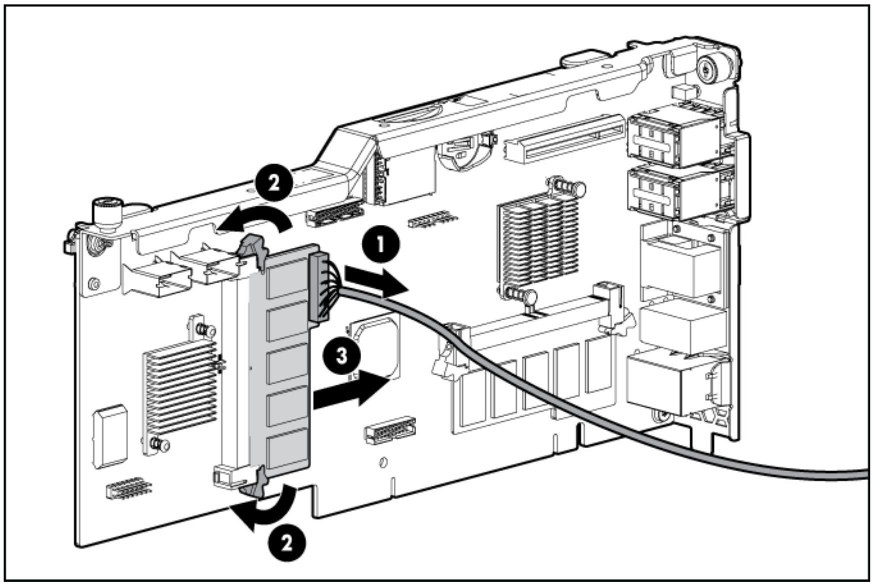
> **CAUTION:** After the server is powered down, wait 15 seconds and then check the amber LED before unplugging the cable from the cache module. If the amber LED blinks after 15 seconds, do not remove the cable from the cache module. The cache module is backing up data, and data is lost if the cable is detached.

> **CAUTION:** Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).

4. If the existing cache is connected to a battery, observe the BBWC Status LED ("Battery pack LEDs" on page 85).
   - If the LED is flashing every 2 seconds, data is still trapped in the cache. Restore system power, and then repeat the previous steps.
   - If the LED is not illuminated, disconnect the battery cable from the cache.
5. Disconnect the cable.
6. Remove the SPI board (on page 30).
7. Open the cache slot latches.
8. Remove the cache module.



To replace the component, reverse the removal procedure.

Removing the BBWC battery pack

△ **CAUTION:** After the server is powered down, wait 15 seconds and then check the amber LED before unplugging the cable from the cache module. If the amber LED blinks after 15 seconds, do not remove the cable from the cache module. The cache module is backing up data, and data is lost if the cable is detached.

△ **CAUTION:** Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

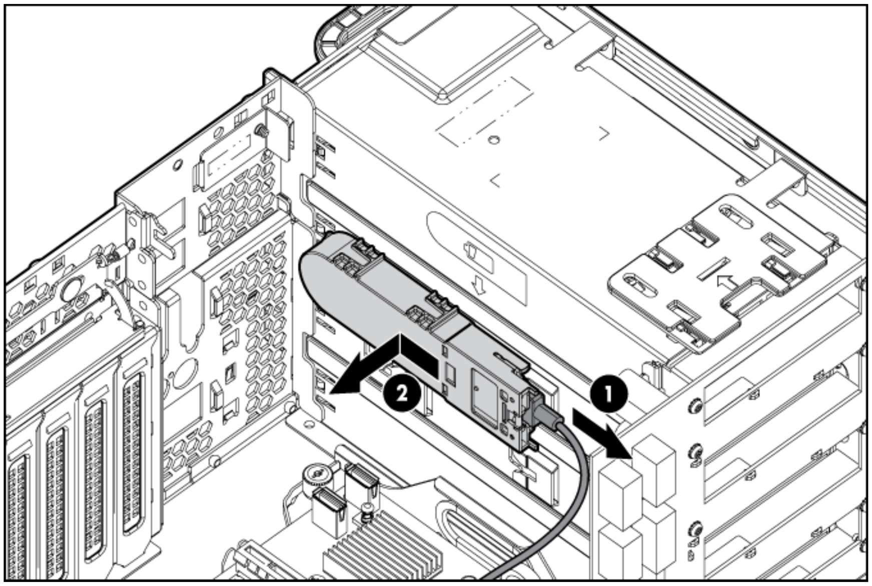
To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. If the existing cache is connected to a battery, observe the BBWC Status LED ("Battery pack LEDs" on page 85).
   - If the LED is flashing every 2 seconds, data is still trapped in the cache. Restore system power, and then repeat the previous steps.

- If the LED is not illuminated, disconnect the battery cable from the cache.

5. Disconnect the cable.
6. Remove the battery pack.

   The SPI board is removed for clarity.



To replace the component, reverse the removal procedure.

Recovering data from the battery-backed write cache

If the server fails, use the following procedure to recover data temporarily stored in the BBWC.

> **CAUTION:** Before starting this procedure, read the information about protecting against electrostatic discharge ("Preventing electrostatic discharge" on page 25).

1. Perform one of the following:
   - Set up a recovery server station using an identical server model. Do not install any internal drives or BBWC in this server. (HP recommends this option.)
   - Find a server that has enough empty drive bays to accommodate all the drives from the failed server and that meets all the other requirements for drive and array migration.
2. Power down the failed server ("Power down the server" on page 26). If any data is stored in the cache module, a green LED on the module flashes every 2 seconds.

   > **CAUTION:** Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

3. Transfer the hard drives from the failed server to the recovery server station.
4. Perform one of the following:
   - If the array controller has failed, remove the cache module ("Removing the BBWC cache module" on page 56) and battery pack ("Removing the BBWC battery pack" on page 57) from the failed array controller, and install the cache module and battery pack on an array controller in the recovery server.

- If the server has failed, remove the controller, cache module ("Removing the BBWC cache module" on page 56), and battery pack ("Removing the BBWC battery pack" on page 57) from the failed server, and install the controller, cache module, and battery pack in the recovery server.

5. Power up the recovery server. A 1759 POST message is displayed, stating that valid data was flushed from the cache. This data is now stored on the drives in the recovery server. You can now transfer the drives (and controller, if one was used) to another server.

Flash-backed write cache procedures

Two types of procedures are provided for the FBWC option:

- Removal and replacement of failed components:
  - Removing the cache module ("Removing the FBWC cache module" on page 59)
  - Removing the capacitor pack ("Removing the FBWC capacitor pack" on page 60)
- Recovery of cached data from a failed server ("Recovering data from the battery-backed write cache" on page 58)

> △ **CAUTION:** Do not detach the cable that connects the battery pack or capacitor pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

Removing the FBWC cache module

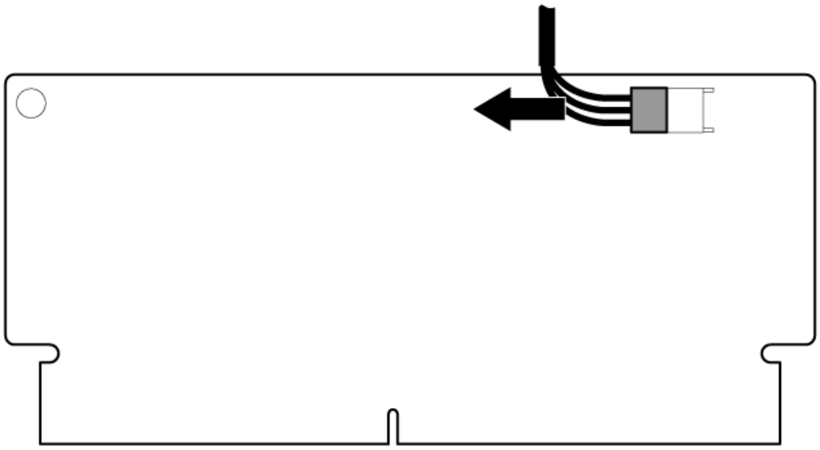
> △ **CAUTION:** After the server is powered down, wait 15 seconds and then check the amber LED before unplugging the cable from the cache module. If the amber LED blinks after 15 seconds, do not remove the cable from the cache module. The cache module is backing up data, and data is lost if the cable is detached.

> △ **CAUTION:** Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

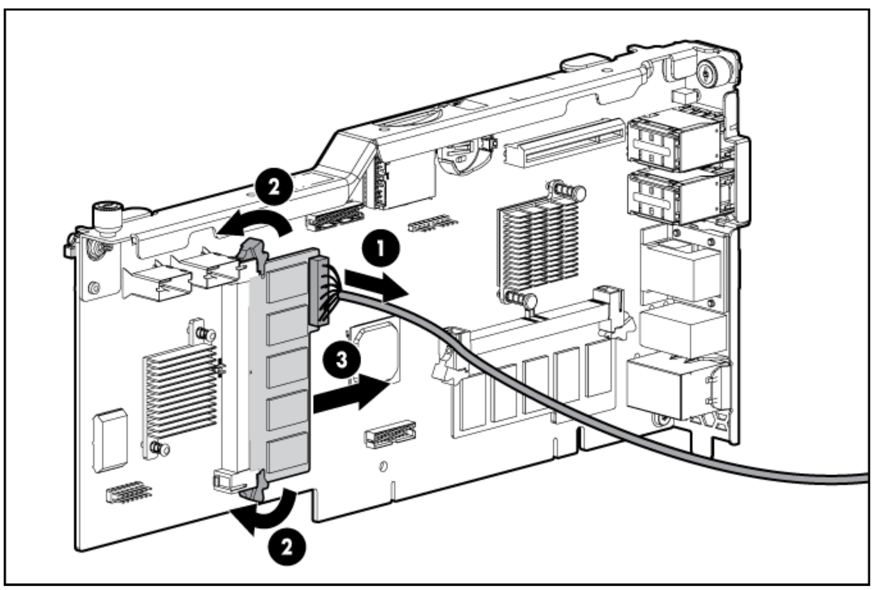
To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. If the existing cache module is connected to a capacitor pack, observe the FBWC module LEDs (on page 87):
   - If the amber LED is flashing, data is trapped in the cache. Restore system power, and then restart this procedure from step 1.
   - If the amber LED is not illuminated, remove the controller from the server, and then continue with the next step.

5. Disconnect the cable.



6. Remove the SPI board (on page 30).
7. Open the cache slot latches.
8. Remove the cache module.



To replace the component, reverse the removal procedure.

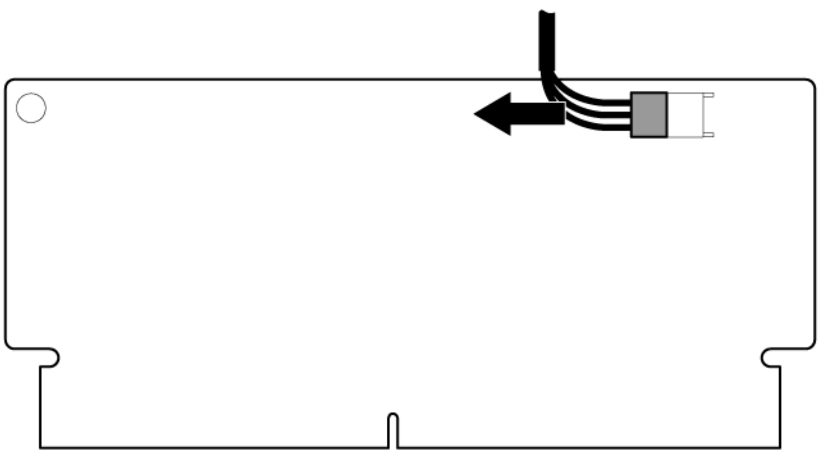
Removing the FBWC capacitor pack

△ **CAUTION:** After the server is powered down, wait 15 seconds and then check the amber LED before unplugging the cable from the cache module. If the amber LED blinks after 15 seconds, do not remove the cable from the cache module. The cache module is backing up data, and data is lost if the cable is detached.

△ **CAUTION:** Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

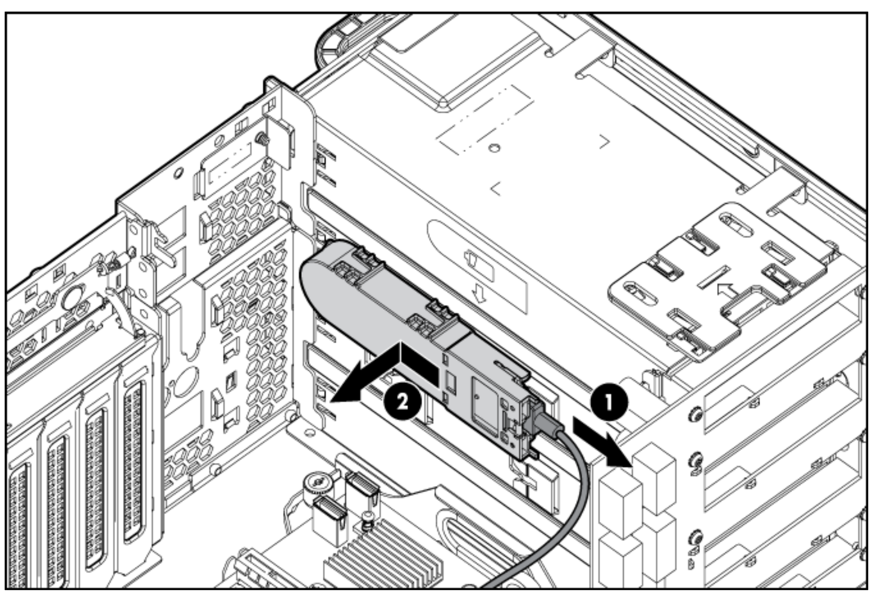
To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. If the existing cache is connected to a battery, observe the FBWC Status LED ("FBWC module LEDs" on page 87).
   - If the LED is flashing every 2 seconds, data is still trapped in the cache. Restore system power, and then repeat the previous steps.
   - If the LED is not illuminated, disconnect the battery cable from the cache.
5. Disconnect the cable.



6. Remove the battery pack.

   The SPI board is removed for clarity.



To replace the component, reverse the removal procedure.

Battery

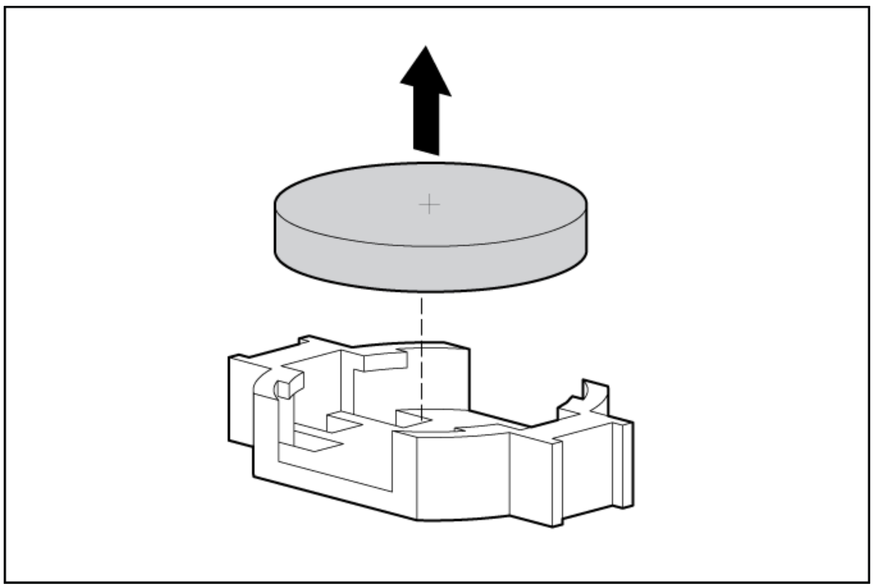
If the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock.

⚠ **WARNING:** The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Remove the SPI board (on page 30).
5. Remove the battery.



To replace the component, reverse the removal procedure.

For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

System board

⚠ **WARNING:** The server weighs approximately 36.3 kg–49.9 kg (80.0 lb–110.0 lb). To reduce the risk of injury, remove the following components before removing the server from the rack:

- Processor memory drawer ("Remove the processor memory drawer" on page 29)
- Hard drives ("SAS/SATA hard drive" on page 30)
- Power supplies ("Hot-plug power supply" on page 47)

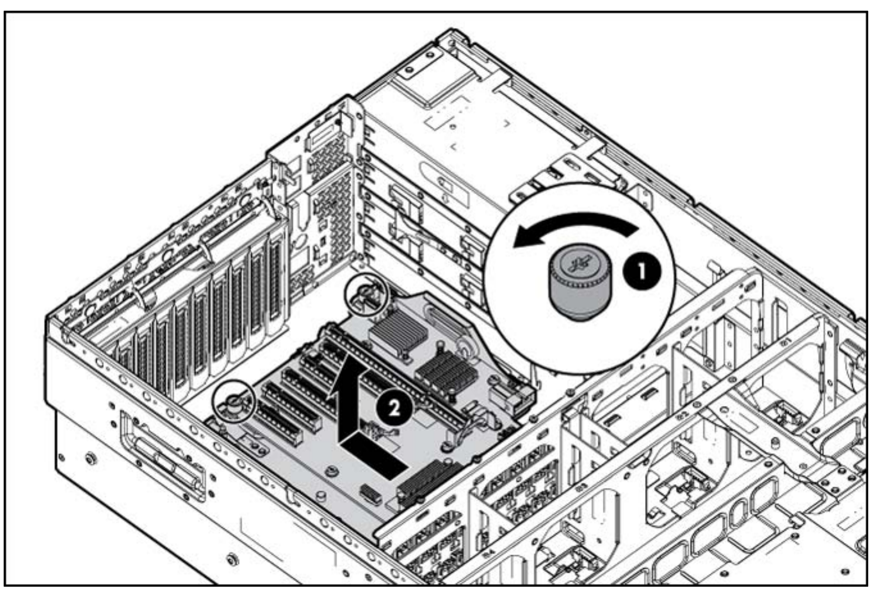
The server weighs 21.8 kg (48.0 lb) with these components removed. Two people might be required to remove the server from the rack.

△ **CAUTION:** Before starting this procedure, read the information about protecting against electrostatic discharge ("Preventing electrostatic discharge" on page 25).

△ **CAUTION:** Only authorized technicians trained by HP should attempt to remove the system board. If you believe the system board requires replacement, contact HP Technical Support before proceeding.

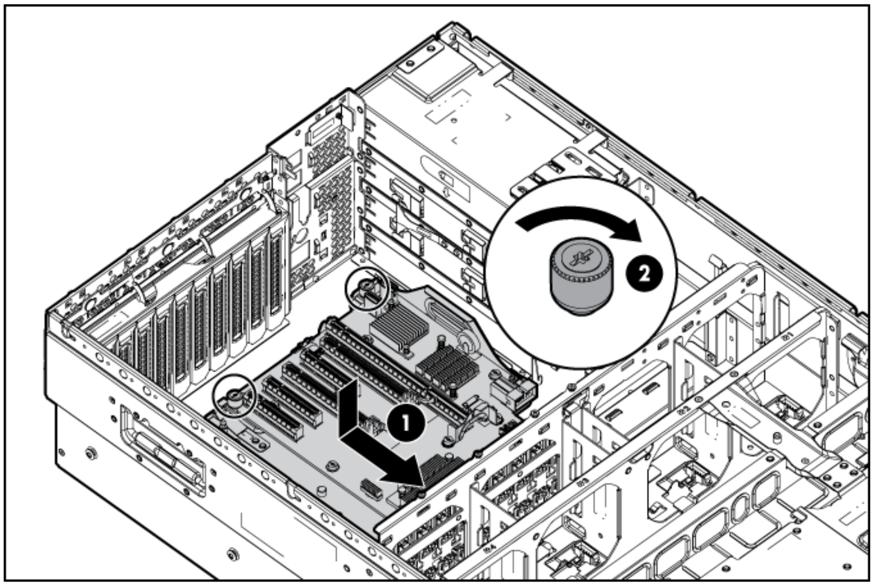
To remove the component:

1. Power down the server (on page 26).
2. Remove the server from the rack (on page 27).
3. Remove the access panel (on page 28).
4. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
5. Remove the processor memory drawer (on page 29).
6. Disconnect all cables from all installed expansion boards.
7. Remove all expansion boards ("Non-hot-plug expansion board" on page 55).
8. Remove the SPI board (on page 30).
9. Remove all I/O expansion boards, if installed ("I/O expansion board" on page 50).
10. Remove the failed system board.



To replace a system board:

1. Install the spare system board.



2. Install all components removed from the server.
3. Install the access panel.
4. Slide the server back into the rack.
5. Power up the server.

After you replace the system board, you must re-enter the server serial number and the product ID.

1. During the server startup sequence, press the **F9** key to access RBSU.
2. Select the **Advanced Options** menu.
3. Select **Service Options**.
4. Select **Serial Number**. The following warnings appear:

   ```
   WARNING! WARNING! WARNING! The serial number is loaded into the system during the manufacturing process and should NOT be modified. This option should only be used by qualified service personnel. This value should always match the serial number sticker located on the chassis.
   ```

   ```
   Warning: The serial number should ONLY be modified by qualified personnel. This value should always match the serial number located on the chassis.
   ```

5. Press the **Enter** key to clear the warning.
6. Enter the serial number and press the **Enter** key.
7. Select **Product ID**. The following warning appears:

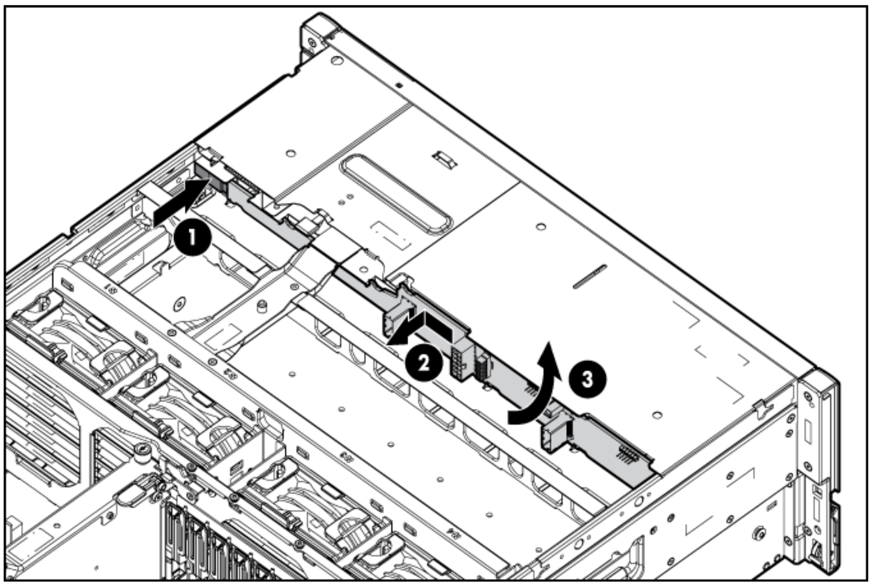
   ```
   Warning: The Product ID should ONLY be modified by qualified personnel. This value should always match the Product ID on the chassis.
   ```

8. Enter the product ID and press the **Enter** key.
9. Press the **Esc** key to close the menu.
10. Press the **Esc** key to exit RBSU.
11. Press the **F10** key to confirm exiting RBSU. The server automatically reboots.

SAS backplane

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Remove all hard drives ("SAS/SATA hard drive" on page 30).
5. Disconnect all cables from the SAS backplane.
6. Release the locking latch.
7. Remove the SAS backplane.



To replace the component, reverse the procedure.

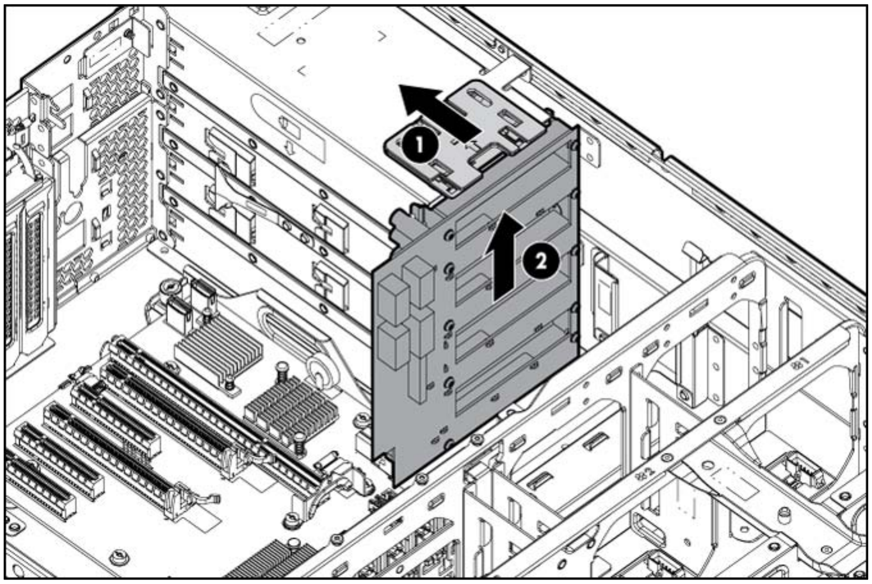
Power supply backplane

⚠ **WARNING:** Only authorized technicians trained by HP should attempt to replace the power supply backplane.

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel (on page 28).
4. Remove all power supplies ("Hot-plug power supply" on page 47).
5. Remove the SPI board (on page 30).
6. Disconnect all cables from the power supply backplane.
7. Slide the plastic retainer to the rear of the server.

8. Remove the backplane.



To replace the component, reverse the removal procedure.

HP Trusted Platform Module

The TPM is not a customer-removable part.

> **CAUTION:** Any attempt to remove an installed TPM from the system board breaks or disfigures the TPM security rivet. Upon locating a broken or disfigured rivet on an installed TPM, administrators should consider the system compromised and take appropriate measures to ensure the integrity of the system data.

If you suspect a TPM board failure, leave the TPM installed and remove the system board. Contact an HP authorized service provider for a replacement system board and TPM board.

Diagnostic tools

Troubleshooting resources

The *HP ProLiant Servers Troubleshooting Guide* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, error message interpretation, issue resolution, and software maintenance on ProLiant servers and server blades. This guide includes problem-specific flowcharts to help you navigate complex troubleshooting processes. To view the guide, select a language:

- English (http://www.hp.com/support/ProLiant_TSG_en)
- French (http://www.hp.com/support/ProLiant_TSG_fr)
- Italian (http://www.hp.com/support/ProLiant_TSG_it)
- Spanish (http://www.hp.com/support/ProLiant_TSG_sp)
- German (http://www.hp.com/support/ProLiant_TSG_gr)
- Dutch (http://www.hp.com/support/ProLiant_TSG_nl)
- Japanese (http://www.hp.com/support/ProLiant_TSG_jp)

SmartStart software

SmartStart is a collection of software that optimizes single-server setup, providing a simple and consistent way to deploy server configuration. SmartStart has been tested on many ProLiant server products, resulting in proven, reliable configurations.

SmartStart assists the deployment process by performing a wide range of configuration activities, including:

- Preparing the system for installing "off-the-shelf" versions of leading operating system software
- Installing optimized server drivers, management agents, and utilities automatically with every assisted installation
- Testing server hardware using the Insight Diagnostics Utility ("HP Insight Diagnostics" on page 70)
- Installing software drivers directly from the CD. With systems that have Internet connection, the SmartStart Autorun Menu provides access to a complete list of ProLiant system software.
- Enabling access to the Array Configuration Utility and Erase Utility

SmartStart is included in the HP Insight Foundation suite for ProLiant. For more information about SmartStart software, see the HP Insight Foundation suite for ProLiant or the HP website (http://www.hp.com/go/foundation).

SmartStart Scripting Toolkit

The SmartStart Scripting Toolkit is a server deployment product that allows you to build an unattended automated installation for high-volume server deployments. The SmartStart Scripting Toolkit is designed to

support ProLiant BL, ML, DL, and SL servers. The toolkit includes a modular set of utilities and important documentation that describes how to apply these tools to build an automated server deployment process.

The Scripting Toolkit provides a flexible way to create standard server configuration scripts. These scripts are used to automate many of the manual steps in the server configuration process. This automated server configuration process cuts time from each deployment, making it possible to scale rapid, high-volume server deployments.

For more information, and to download the SmartStart Scripting Toolkit, see the HP website (http://www.hp.com/servers/sstoolkit).

HP Insight Remote Support software

HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP Insight Remote Support supplements your monitoring 24 x 7 to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- HP Insight Remote Support Standard: This software supports server and storage devices and is optimized for environments with 1–50 servers. Ideal for customers who can benefit from proactive notification but do not need proactive service delivery and integration with a management platform.
- HP Insight Remote Support Advanced: This software provides comprehensive remote monitoring and proactive service support for nearly all HP servers, storage, network, and SAN environments, plus selected non-HP servers that have a support obligation with HP. It is integrated with HP Systems Insight Manager. A dedicated server is recommended to host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

Details for both versions are available on the HP website (http://www.hp.com/go/insightremotesupport).

To download the software, go to Software Depot (http://www.software.hp.com).

Select **Insight Remote Support** from the menu on the right.

Option ROM Configuration for Arrays

Before installing an operating system, you can use the ORCA utility to create the first logical drive, assign RAID levels, and establish online spare configurations.

The utility also provides support for the following functions:

- Reconfiguring one or more logical drives
- Viewing the current logical drive configuration
- Deleting a logical drive configuration
- Setting the controller to be the boot controller
- Selecting the boot volume

If you do not use the utility, ORCA will default to the standard configuration.

For more information regarding the default configurations that ORCA uses, see the *HP ROM-Based Setup Utility User Guide* on the Documentation CD.

For more information about the controller and its features, see the *HP Smart Array Controllers for HP ProLiant Servers User Guide* on the HP website (http://www.hp.com/support/SAC_UG_ProLiantServers_en). To configure arrays, see the *Configuring Arrays on HP Smart Array Controllers Reference Guide* on the HP website (http://www.hp.com/support/CASAC_RG_en).

HP ROM-Based Setup Utility

RBSU is a configuration utility embedded in ProLiant servers that performs a wide range of configuration activities that can include the following:

- Configuring system devices and installed options
- Enabling and disabling system features
- Displaying system information
- Selecting the primary boot controller
- Configuring memory options
- Language selection

For more information on RBSU, see the *HP ROM-Based Setup Utility User Guide* on the Documentation CD or the HP website (http://www.hp.com/support/smartstart/documentation).

ROMPaq utility

The ROMPaq utility enables you to upgrade the system firmware (BIOS). To upgrade the firmware, insert a ROMPaq USB Key into an available USB port and boot the system. In addition to ROMPaq, Online Flash Components for Windows and Linux operating systems are available for updating the system firmware.

The ROMPaq utility checks the system and provides a choice (if more than one exists) of available firmware revisions.

For more information, go to the HP website (http://www.hp.com/go/hpsc) and click on **Drivers, Software & Firmware**. Then, enter your product name in the **Find an HP product** field and click **Go**.

Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML timestamps each event with 1-minute granularity.

You can view recorded events in the IML in several ways, including the following:

- From within HP SIM
- From within Survey Utility
- From within operating system-specific IML viewers
  - For NetWare: IML Viewer (does not apply to HP ProLiant DL980 Servers)
  - For Windows®: IML Viewer
  - For Linux: IML Viewer Application
- From within the iLO 3 user interface
- From within HP Insight Diagnostics (on page 70)

For more information, see the Management CD or DVD in the HP Insight Foundation suite for ProLiant.

Insight Lights-Out 3 technology

The iLO 3 subsystem is a standard component of selected ProLiant servers that provides server health and remote server manageability. The iLO 3 subsystem includes an intelligent microprocessor, secure memory, and a dedicated network interface. This design makes iLO 3 independent of the host server and its operating system.

In addition to remote management features, iLO 3 is also responsible for managing the health of the ProLiant server. The intelligence of iLO 3 manages the Sea of Sensors thermal control, directs power management functions, and monitors the health of server components.

The iLO 3 subsystem provides secure remote access from any authorized network client. The enhancements to iLO 3 enable customers to get work done faster by providing turbo-charged remote access performance, a streamlined user experience, and enhanced standards support.

Using iLO 3, you can do the following:

- Access a high-performance and secure Remote Console to the server from anywhere in the world.
- Use the shared iLO 3 Remote Console to collaborate with up to six server administrators.
- Remotely mount high-performance Virtual Media devices to the server.
- Securely and remotely control the power state of the managed server.
- Send alerts from iLO 3 regardless of the state of the host server.
- Access advanced troubleshooting features through the iLO 3 interface.

For more information about iLO 3 features (which may require an iLO Advanced Pack or iLO Advanced for BladeSystem license), see the iLO 3 documentation on the Documentation CD or on the HP website (http://www.hp.com/go/ilo).

Automatic Server Recovery

ASR is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue screen, ABEND (does not apply to HP ProLiant DL980 Servers), or panic. A system fail-safe timer, the ASR timer, starts when the System Management driver, also known as the Health Driver, is loaded. When the operating system is functioning properly, the system periodically resets the timer. However, when the operating system fails, the timer expires and restarts the server.

ASR increases server availability by restarting the server within a specified time after a system hang. At the same time, the HP SIM console notifies you by sending a message to a designated pager number that ASR has restarted the system. You can disable ASR from the System Management Homepage or through RBSU.

HP Insight Diagnostics

HP Insight Diagnostics is a proactive server management tool, available in both offline and online versions, that provides diagnostics and troubleshooting capabilities to assist IT administrators who verify server installations, troubleshoot problems, and perform repair validation.

HP Insight Diagnostics Offline Edition performs various in-depth system and component testing while the OS is not running. To run this utility, launch the SmartStart CD.

HP Insight Diagnostics Online Edition is a web-based application that captures system configuration and other related data needed for effective server management. Available in Microsoft® Windows® and Linux versions, the utility helps to ensure proper system operation.

For more information or to download the utility, refer to the HP website (http://www.hp.com/servers/diags).

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 70) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

This functionality supports operating systems that may not be supported by the server. For operating systems supported by the server, see the HP website (http://www.hp.com/go/supportos).

If a significant change occurs between data-gathering intervals, the survey function marks the previous information and overwrites the survey data files to reflect the latest changes in the configuration.

Survey functionality is installed with every SmartStart-assisted HP Insight Diagnostics installation, or it can be installed through the HP PSP.

NOTE: The current version of SmartStart provides the memory spare part numbers for the server. To download the latest version, see the HP website (http://www.hp.com/support).

USB support

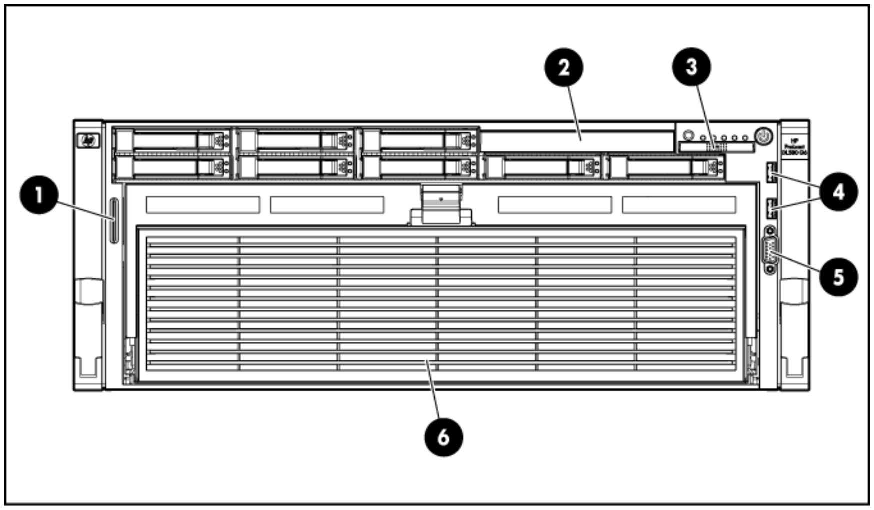
HP provides both standard USB 2.0 support and legacy USB 2.0 support. Standard support is provided by the OS through the appropriate USB device drivers. Before the OS loads, HP provides support for USB devices through legacy USB support, which is enabled by default in the system ROM.

Legacy USB support provides USB functionality in environments where USB support is not available normally. Specifically, HP provides legacy USB functionality for the following:

- POST
- RBSU
- Diagnostics
- DOS
- Operating environments which do not provide native USB support

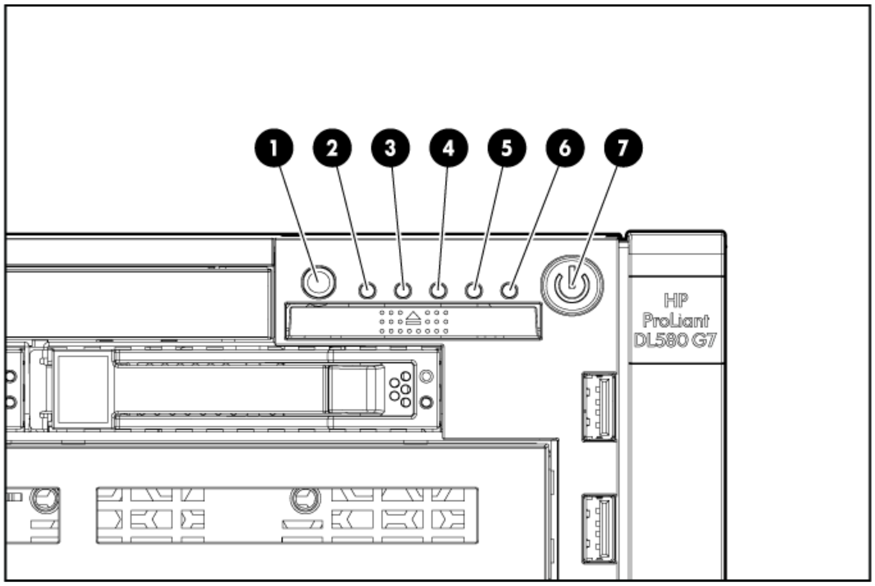
Component identification

Front panel components



Item	Description
1	Serial and PID tag
2	Optical drive
3	Systems Insight Display
4	USB connectors (2)
5	Video connector
6	Processor memory drawer

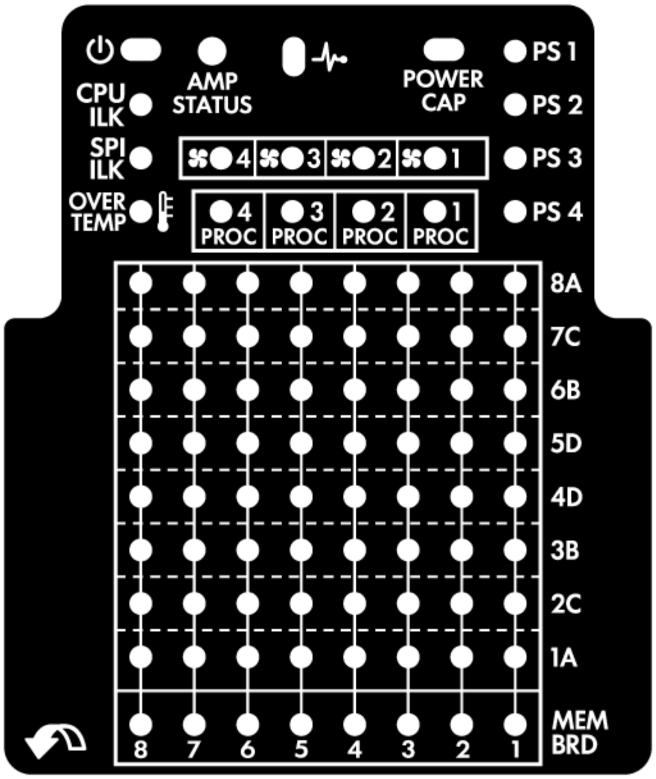
Front panel LEDs and buttons



Item	Description	Status
1	UID button and LED	Blue—Activated Blue (flashing)—Server being managed remotely Off—Deactivated
2	Health LED	Green—Normal (system on) Amber (flashing)—Internal system health degraded Red (flashing)—Internal system health critical Off—Normal (system off)
3	NIC 1 LED	Green—Linked to network Green (flashing)—Linked with activity on the network Off—No network connection
4	NIC 2 LED	Green—Linked to network Green (flashing)—Linked with activity on the network Off—No network connection
5	NIC 3 LED	Green—Linked to network Green (flashing)—Linked with activity on the network Off—No network connection
6	NIC 4 LED	Green—Linked to network Green (flashing)—Linked with activity on the network Off—No network connection
7	Power on/Standby button and LED	Amber—System has AC power and is in standby mode. Green—System has AC power and is powered on. Off—System has no AC power.

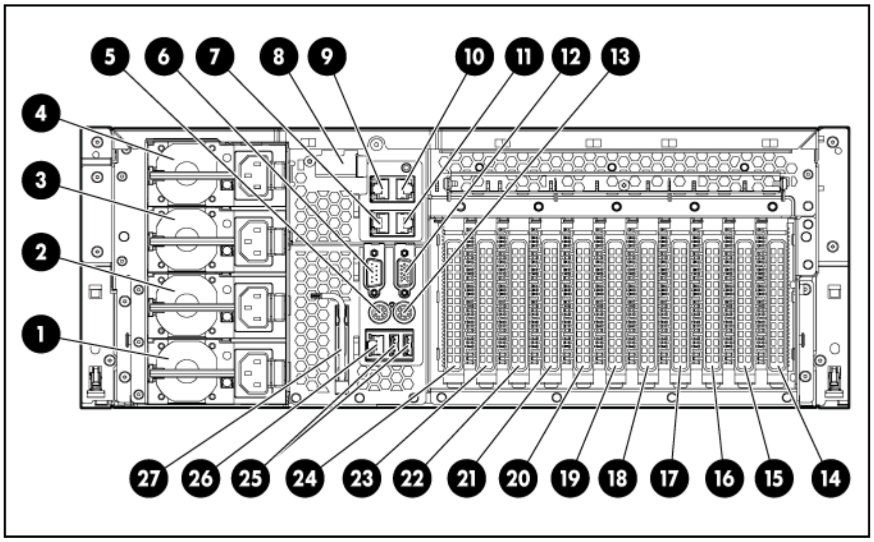
Systems Insight Display

The Systems Insight Display LEDs represent the server and component layout.



LED	Description
AMP status	Off—No protection Green—Protection enabled Amber—Memory failure occurred Amber (flashing)—Memory configuration error
Health	Green—Normal (system on) Amber (flashing)—Internal system health degraded Red (flashing)—Internal system health critical Off—Normal (system off)
Power cap	Green—System on or requesting power on Flashing amber—Power on denied Off—Standby
All other LEDs	Off—Normal Amber—Failed or missing component

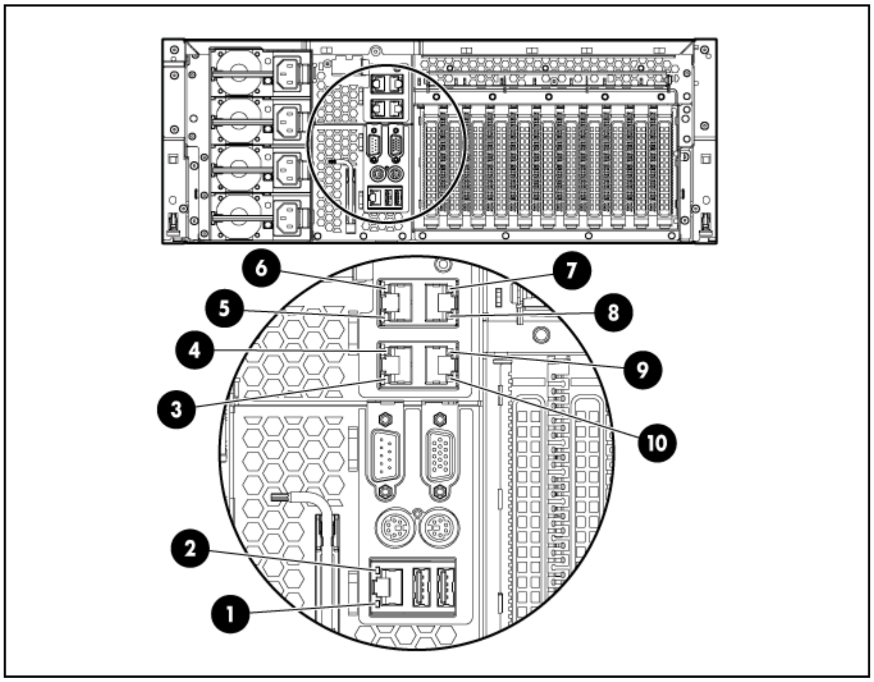
Rear panel components



Item	Description	Item	Description
1	Power supply bay 4 (optional)	15	Expansion slot 2 (optional)
2	Power supply bay 3 (optional)	16	Expansion slot 3 (optional)
3	Power supply bay 2	17	Expansion slot 4 (optional)
4	Power supply bay 1	18	Expansion slot 5 (optional)
5	Mouse connector	19	Expansion slot 6 (optional)
6	Serial connector	20	PCIe2 x8 expansion slot 7
7	NIC 2 connector	21	PCIe2 x8 expansion slot 8
8	10Gb NIC adapter blank	22	PCIe2 x16 expansion slot 9
9	NIC 4 connector	23	PCIe2 x8 expansion slot 10
10	NIC 3 connector	24	PCIe2 x16 expansion slot 11
11	NIC 1 connector	25	USB connectors (2)
12	Video connector	26	iLO 3 connector
13	Keyboard connector	27	T-10/T-15 Torx screwdriver
14	Expansion slot 1 (optional)	—	—

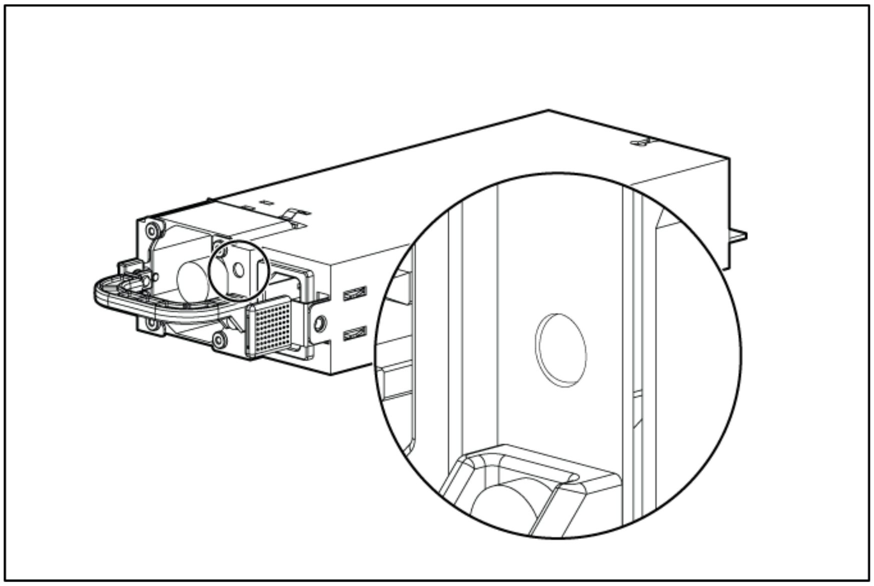
For optional configuration of slots 1–6, see "I/O expansion board components (on page 81)."

Rear panel LEDs and buttons



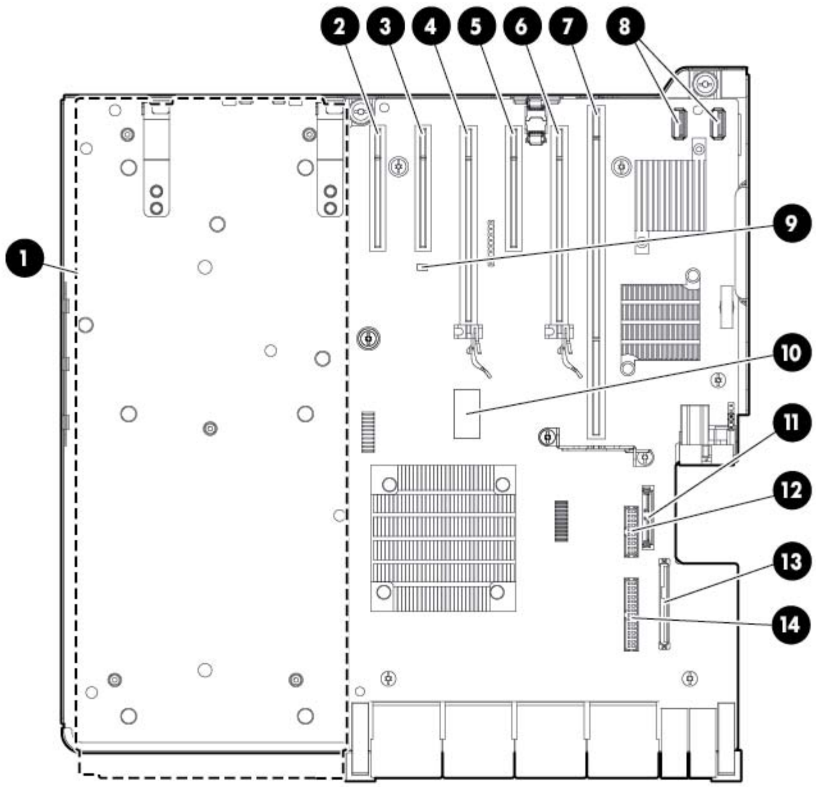
Item	Description	LED color	Status
1	iLO 3 NIC Activity LED	Green	On or flashing—Network activity Off—No network activity
2	iLO 3 NIC Link LED	Green	On—Linked to network Off—Not linked to network
3	NIC 2 Activity LED	Green	On or flashing—Network activity Off—No network activity
4	NIC 2 Link LED	Green	On—Linked to network Off—Not linked to network
5	NIC 4 Activity LED	Green	On or flashing—Network activity Off—No network activity
6	NIC 4 Link LED	Green	On—Linked to network Off—Not linked to network
7	NIC 3 Link LED	Green	On—Linked to network Off—Not linked to network
8	NIC 3 Activity LED	Green	On or flashing—Network activity Off—No network activity
9	NIC 1 Link LED	Green	On—Linked to network Off—Not linked to network
10	NIC 1 Activity LED	Green	On or flashing—Network activity Off—No network activity

Power supply LED

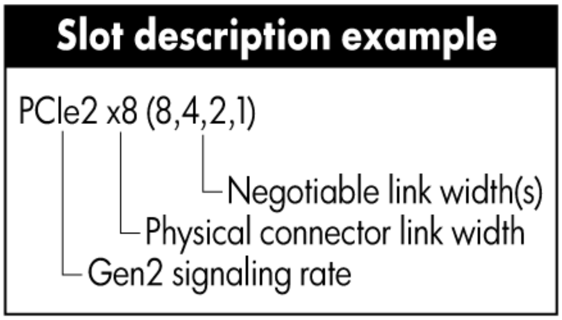


Power LED	Status
Off	No AC power to power supply units
Green	AC is present. Standby output is on, output is disabled.
Green	AC is present. Standby output is on, power supply DC output is on and OK.
Off	Power supply failure (includes overvoltage and overtemperature)

System board components



Item	Description
1	Optional I/O expansion board connectors: • PCI-X/PCI Express I/O expansion board • PCI Express I/O expansion board
2	Slot 7 PCIe2 x8 (4, 2, 1)
3	Slot 8 PCIe2 x8 (4, 2, 1)
4	Slot 9 PCIe2 x16 (8, 4, 2, 1)
5	Slot 10 PCIe2 x8 (4, 2, 1)
6	Slot 11 PCIe2 x8 (8, 4, 2, 1)
7	SPI board connector
8	Internal USB connectors (2)
9	NMI jumper
10	System maintenance switch
11	Optical drive connector
12	Video/USB connector
13	Solid state drive connector
14	Power button/UID connector



System maintenance switch

The system maintenance switch (SW1) is an eight-position switch that is used for system configuration. The default position for all eight positions is Off.

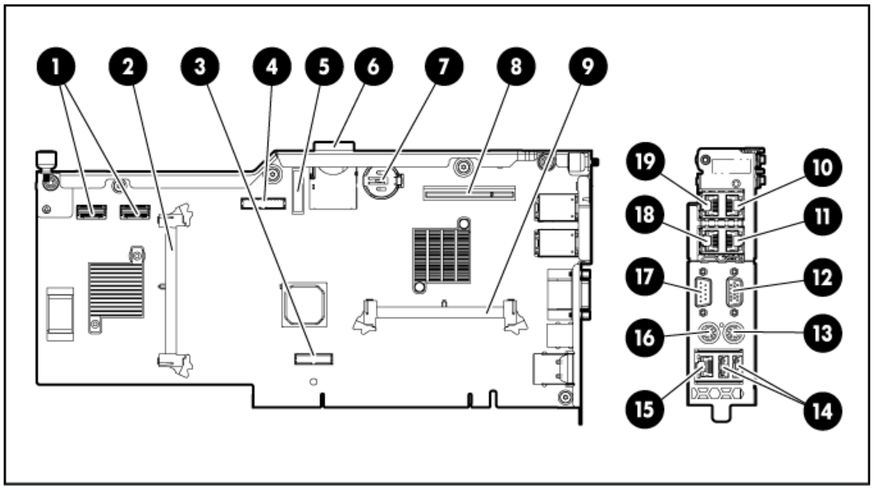
Position	Description	Function
S1	iLO 3 security	Off = iLO 3 security is enabled. On = iLO 3 security is disabled.
S2	Configuration lock	Off = System configuration can be changed. On = System configuration is locked.
S3	Reserved	Reserved
S4	Reserved	Reserved
S5	Password protection override	Off = No function On = Clears power-on password and administrator password
S6	Invalidate configuration	Off = Normal On = Clears NVRAM
S7	Reserved	Reserved
S8	Reserved	Reserved

NMI jumper

The NMI jumper allows administrators to perform a memory dump before performing a hard reset. Crash dump analysis is an essential part of eliminating reliability problems, such as hangs or crashes in OSs, device drivers, and applications. Many crashes can freeze a system, requiring you to do a hard reset. Resetting the system erases any information that would support root cause analysis.

Systems running Microsoft® Windows® experience a blue-screen trap when the OS crashes. When this happens, Microsoft® recommends that system administrators perform an NMI event by temporarily shorting the NMI header with a jumper. The NMI event enables a hung system to become responsive again.

SPI board components

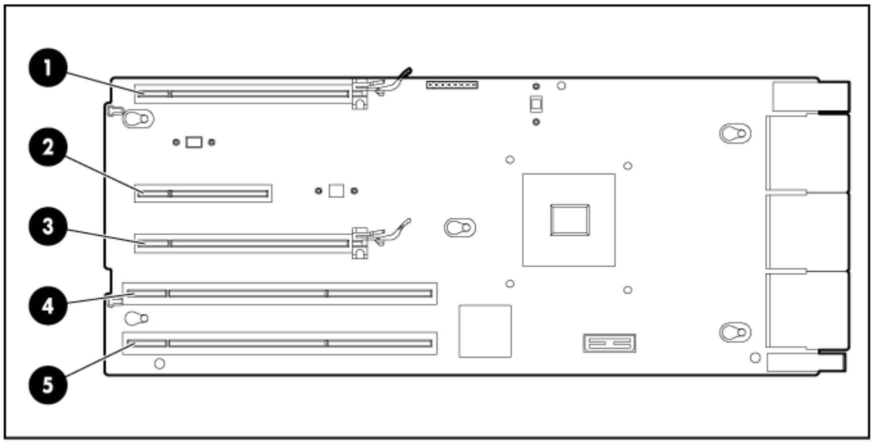


Item	Description
1	Mini-SAS connectors (2)
2	SAS cache connector
3	TPM connector
4	Fan data connector
5	RMII connector
6	SD card slot
7	Battery
8	10Gb NIC connector*
9	NIC cache connector*
10	NIC 3 connector
11	NIC 1 connector
12	Video connector
13	Keyboard connector
14	USB connectors (2)
15	iLO 3 connector
16	Mouse connector
17	Serial connector
18	NIC 2 connector
19	NIC 4 connector

*Applicable only on the NC375i SPI board

I/O expansion board components

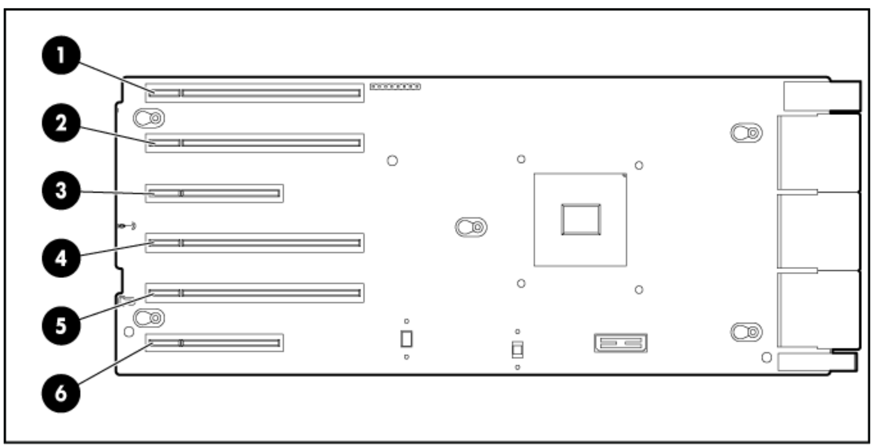
- PCI-X/PCI Express I/O expansion board



Item	Description
1	Slot 6 PCIe2 x16 (16, 8, 4, 2, 1)
2	Slot 4 PCIe2 x8 (4, 2, 1)*
3	Slot 3 PCIe2 x16 (16, 8, 4, 2, 1)
4	Slot 2 PCI-X
5	Slot 1 PCI-X

*Slot 4 is physically a x8 slot but operates electrically as a x4 slot.

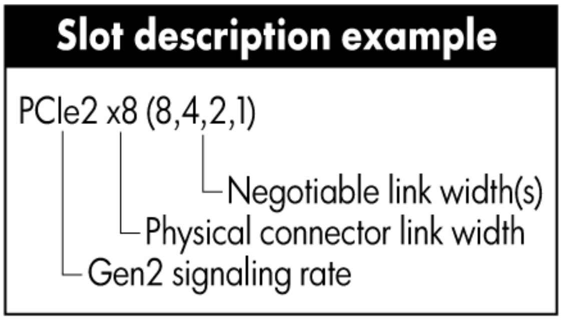
- PCI Express I/O expansion board



Item	Description
1	Slot 6 PCIe2 x16 (8, 4, 2, 1)**
2	Slot 5 PCIe2 x16 (8, 4, 2, 1)**
3	Slot 4 PCIe2 x8 (4, 2, 1)*
4	Slot 3 PCIe2 x16 (8, 4, 2, 1)**
5	Slot 2 PCIe2 x16 (8, 4, 2, 1)**
6	Slot 1 PCIe1 x8 (4, 2, 1)*

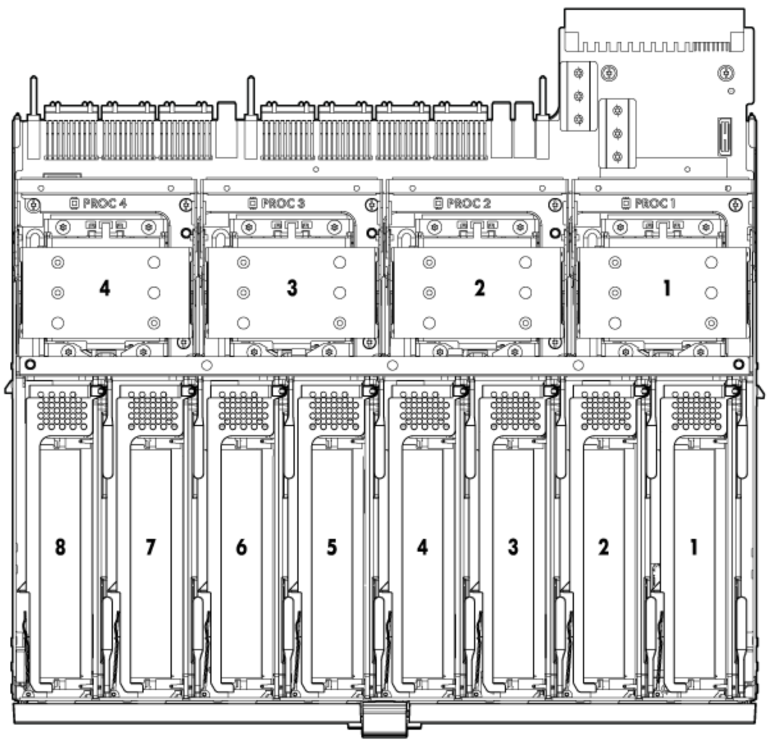
*Slots 1 and 4 are physically x8 slots but operate electrically as x4 slots.

**Slots 2, 3, 5 and 6 are physically x16 slots but operate electrically as x8 slots.



Processors and memory cartridges

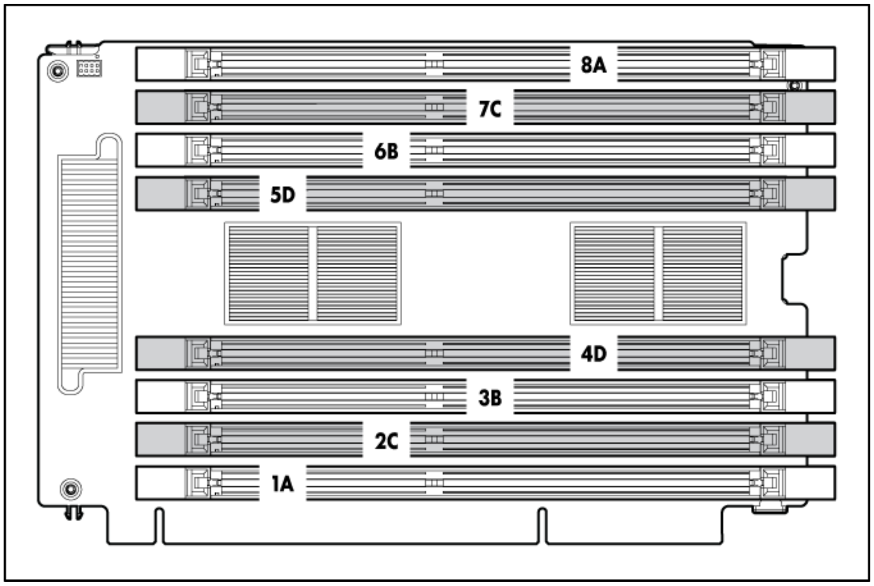
The processor memory drawer contains 4 processor sockets and 8 memory cartridges.



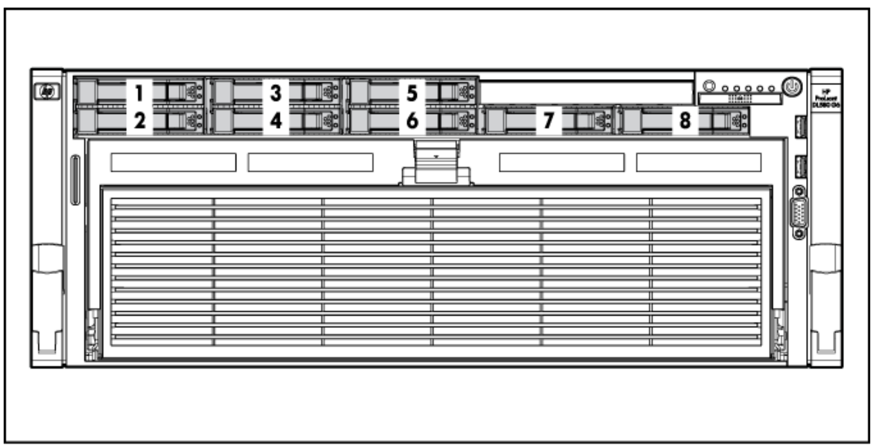
For DIMM numbering and installation guidelines, see the server user guide.

DIMM slot locations

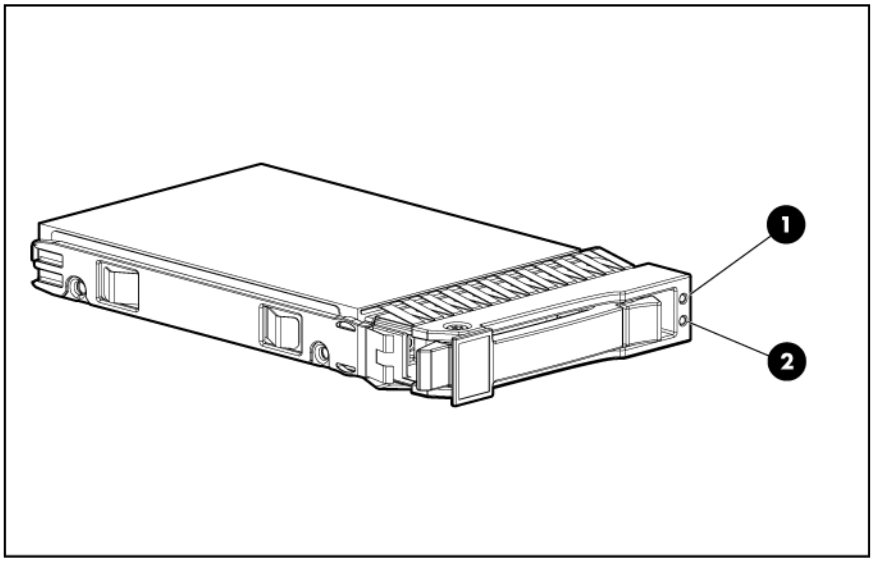
Each memory module contains 8 DIMM slots. The paired banks are identified by the letters A through D.



Device numbers



Hard drive LEDs



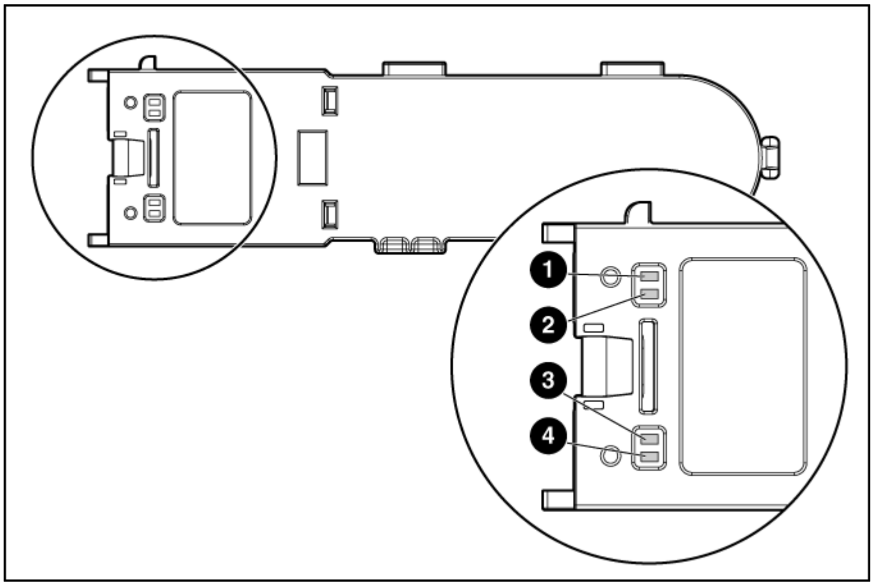
Item	Description
1	Fault/UID LED (amber/blue)
2	Online LED (green)

Hard drive LED combinations

Online/activity LED (green)	Fault/UID LED (amber/blue)	Interpretation
On, off, or flashing	Alternating amber and blue	The drive has failed, or a predictive failure alert has been received for this drive; it also has been selected by a management application.
On, off, or flashing	Steadily blue	The drive is operating normally, and it has been selected by a management application.
On	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
On	Off	The drive is online, but it is not active currently.
Flashing regularly (1 Hz)	Amber, flashing regularly (1 Hz)	**Do not remove the drive. Removing a drive may terminate the current operation and cause data loss.** The drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive. To minimize the risk of data loss, do not replace the drive until the expansion or migration is complete.
Flashing regularly (1 Hz)	Off	**Do not remove the drive. Removing a drive may terminate the current operation and cause data loss.** The drive is rebuilding, or it is part of an array that is undergoing capacity expansion or stripe migration.
Flashing irregularly	Amber, flashing regularly (1 Hz)	The drive is active, but a predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Flashing irregularly	Off	The drive is active, and it is operating normally.

Online/activity LED (green)	Fault/UID LED (amber/blue)	Interpretation
Off	Steadily amber	A critical fault condition has been identified for this drive, and the controller has placed it offline. Replace the drive as soon as possible.
Off	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Off	Off	The drive is offline, a spare, or not configured as part of an array.

Battery pack LEDs

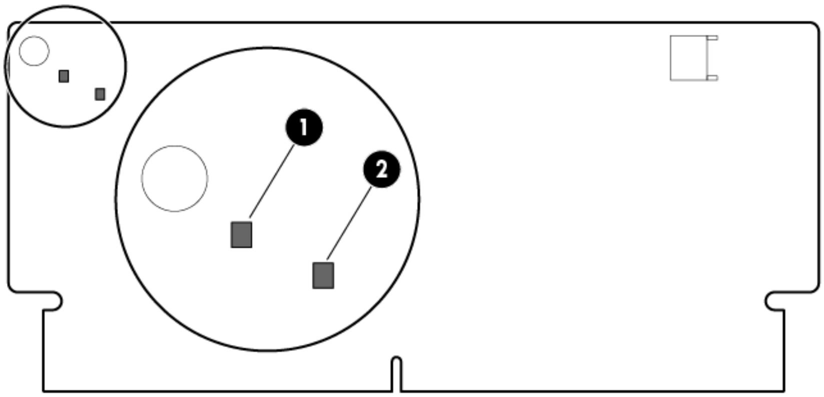


Item	Color	Description
1	Green	System Power LED. This LED is on when the system is powered up and 12 V system power is available. This power supply is used to maintain the battery charge and provide supplementary power to the cache microcontroller.
2	Green	Auxiliary Power LED. This LED is on when 3.3V auxiliary voltage is detected. The auxiliary voltage is used to preserve BBWC data and is available any time that the system power cords are connected to a power supply.
3	Amber	Battery Health LED. To interpret the illumination patterns of this LED, see the following table.
4	Green	BBWC Status LED. To interpret the illumination patterns of this LED, see the following table.

LED3 pattern	LED4 pattern	Interpretation
Off	Flashing (2 Hz)	The system is powered down, and the cache contains data that has not yet been written to the drives. Restore system power as soon as possible to prevent data loss. Data preservation time is extended any time that 3.3 V auxiliary power is available, as indicated by LED 2. In the absence of auxiliary power, battery power alone preserves the data. A fully-charged battery can normally preserve data for at least 2 days. The battery lifetime also depends on the cache module size. For more information, see the controller QuickSpecs on the HP website (http://www.hp.com).
Off	Double flash, then pause	The cache microcontroller is waiting for the host controller to communicate.
Off	Flashing (1 Hz)	The battery pack is below the minimum charge level and is being charged. Features that require a battery (such as write cache, capacity expansion, stripe size migration, and RAID migration) are unavailable temporarily until charging is complete. The recharge process takes between 15 minutes and 2 hours, depending on the initial capacity of the battery.
Off	On	The battery pack is fully charged, and posted write data is stored in the cache.
Off	Off	The battery pack is fully charged, and no posted write data exists in the cache.
Flashing (1 Hz)	Flashing (1 Hz)	An alternating green and amber flashing pattern indicates that the cache microcontroller is executing from within its boot loader and receiving new flash code from the host controller.
On	—	A short circuit exists across the battery terminals or within the battery pack. BBWC features are disabled until the battery pack is replaced. The life expectancy of a battery pack is typically more than 3 years.
Flashing (1 Hz)	—	An open circuit exists across the battery terminals or within the battery pack. BBWC features are disabled until the battery pack is replaced. The life expectancy of a battery pack is typically more than 3 years.

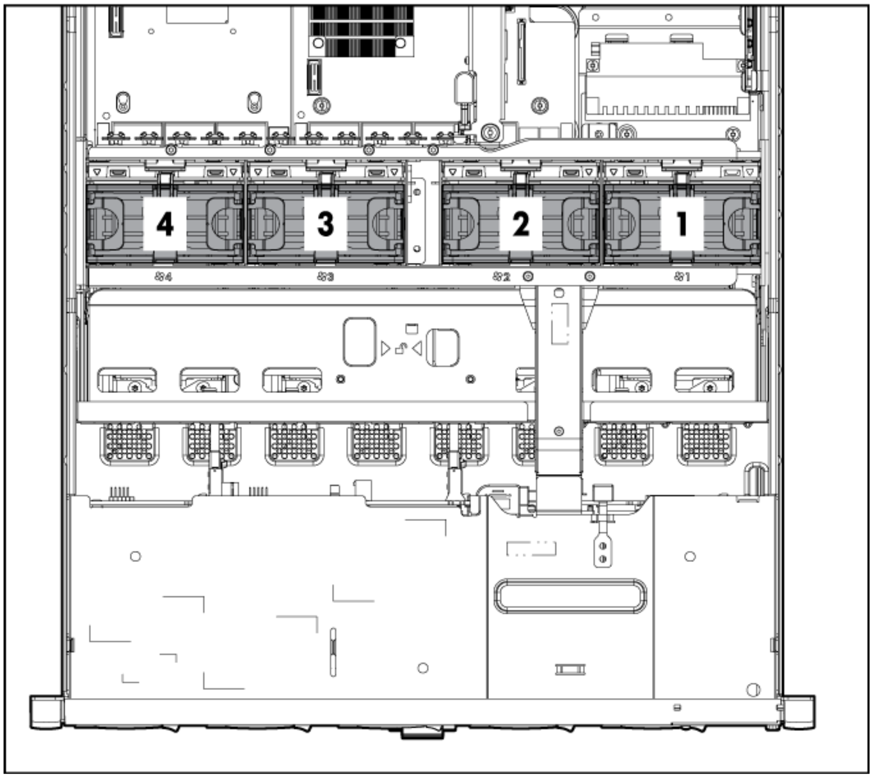
FBWC module LEDs

The FBWC module has two single-color LEDs (green and amber). The LEDs are duplicated on the reverse side of the cache module to facilitate status viewing.

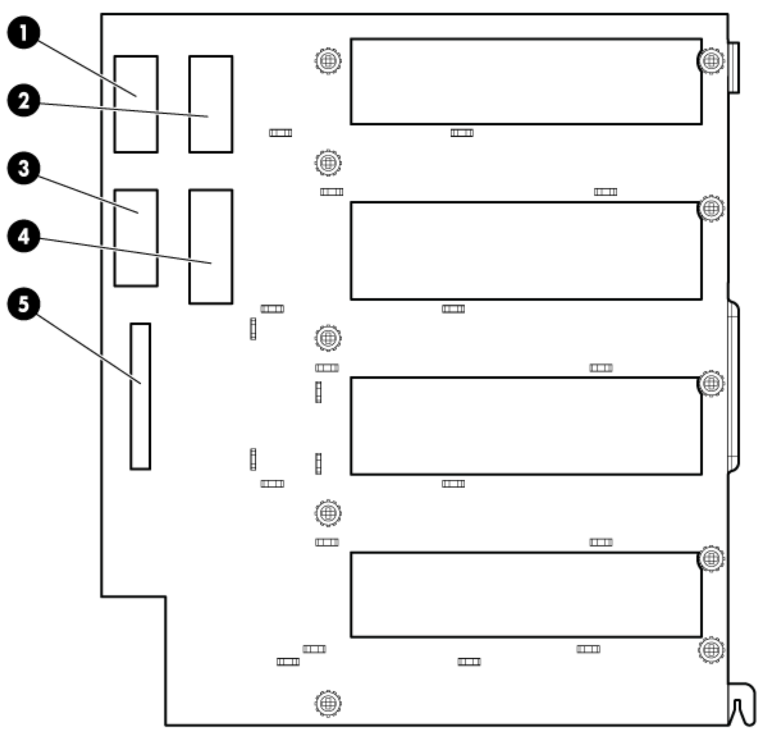


1 Green LED	2 Amber LED	Interpretation
Off	On	A backup is in progress.
Flashing (1 Hz)	On	A restore is in progress.
Flashing (1 Hz)	Off	The capacitor pack is charging.
On	Off	The capacitor pack has completed charging.
Flashing (2 Hz) Alternating with amber LED	Flashing (2 Hz) Alternating with green LED	One of the following conditions exists: • The charging process has timed out. • The capacitor pack is not connected.
On	On	The flash code image failed to load.
Off	Off	The flash code is corrupt.

Fan locations



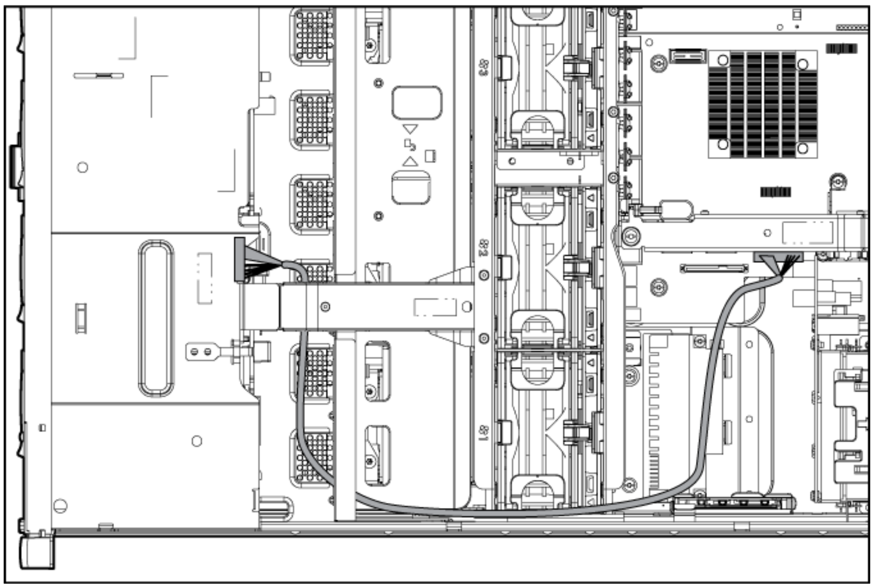
Power supply backplane components



Item	Description
1	Graphics card power connector
2	Graphics card power connector
3	Graphics card power connector
4	SAS backplane power connector
5	Fan power connector

Cabling

DVD-ROM drive cabling



Specifications

Environmental specifications

Specification	Value
Temperature range*	
Operating	10°C to 35°C (50°F to 95°F)
Shipping	-40°C to 70°C (-40°F to 158°F)
Maximum wet bulb temperature	28°C (82.4°F)
Relative humidity (noncondensing)**	
Operating	10% to 90%
Nonoperating	5% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3,048 m (10,000 ft) is applicable. No direct sunlight allowed.
** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 kPa.

Server specifications

Specification	Value
Dimension	—
Height	17.6 cm (6.94 in)
Depth	67.3 cm (26.5 in)
Width	46.3 cm (19.0 in)
Weight (maximum)	47.6 kg (105 lb)
Weight (no drives installed)	36.3 kg (80 lb)
Input requirement	—
Rated input voltage	100–127 VAC 200–240 VAC
Rated input frequency	50–60 Hz
Rated input current	@ 100 VAC–12A @ 200 VAC–8A
Rated input power	@100 VAC–1161 W @200 VAC–1598 W
BTUs per hour	@100 VAC–3960 BTU @200 VAC–5450 BTU
Power supply output	—
Power supply output	910 W (low line) 1300 W (high line)

Acronyms and abbreviations

ABEND

abnormal end

ASR

Automatic Server Recovery

BBWC

battery-backed write cache

FBWC

flash-backed write cache

iLO 3

Integrated Lights-Out 3

IML

Integrated Management Log

NVRAM

nonvolatile memory

ORCA

Option ROM Configuration for Arrays

PCIe

peripheral component interconnect express

PCI-X

peripheral component interconnect extended

PID

port ID

POST

Power-On Self Test

RBSU

ROM-Based Setup Utility

SAS

serial attached SCSI

SD

Secure Digital

SIM

Systems Insight Manager

SPI

system peripheral interface

TPM

Trusted Platform Module

UID

unit identification

USB

universal serial bus

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